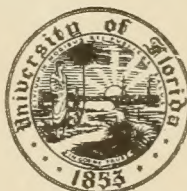
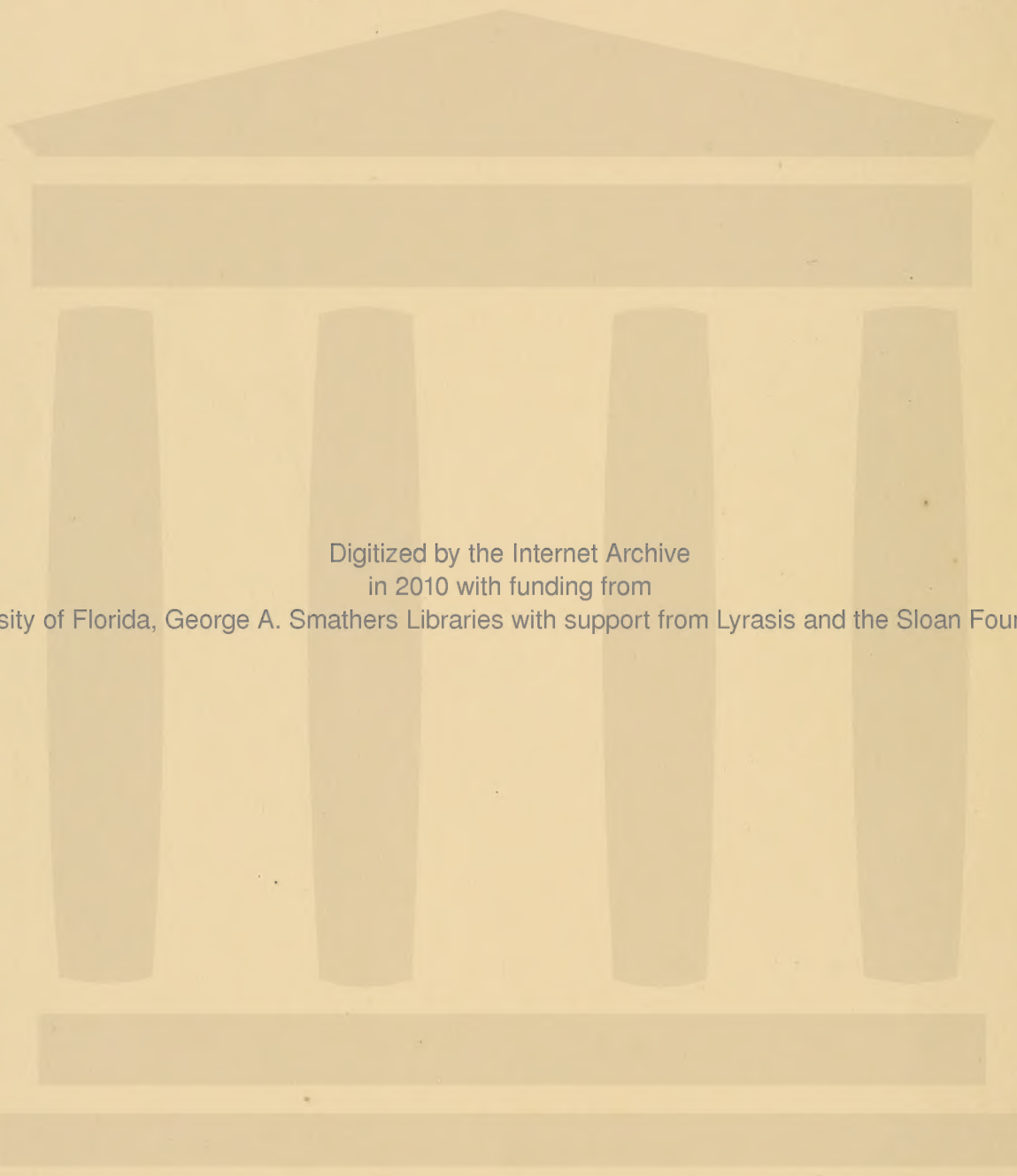


CANAL RECORD

VOLUME 6

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CANAL



RECORD

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Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Work at the Spillway of Gatun Dam.

Following the completion and closing of the upper guard gates in Gatun Locks, the sluice gates in the ogee of Gatun Spillway dam were closed on August 17. The upper lock gates are holding the water pumped out of the culverts, up to the level of the emergency dam sill plus 37.4, with very slight leakage. The surface of the lake is rising about .5 foot per day, and its rise and spread are plainly perceptible. The old Panama railroad embankment between Gatun and Lion Hill is discernible only by a scant fringe of the tops of weeds.

At the Spillway, concrete is being placed from the trestle built out to the ogee from the east side of the Spillway channel, across the intake of the penstocks for the hydroelectric station. The work at present is on the abutment at the east end of the ogee. It will be built to 115 feet above sealevel, and will take the place of a pier in the support of the regulating gate at the east end of the ogee. Wooden forms are being erected for the building of several of the piers which will be placed 45 feet apart along the top of the dam. The 14 gates which will be raised and lowered between piers to regulate the surface of the lake, when it is higher than 50 feet above sealevel, have been assembled by the forces of the McClintic-Marshall Company, in the abandoned borrow pit north of the division office building. All of them have been erected to full height, the work yet to be done on them consisting of sheathing, riveting, and caulking.

Transfer of Air Compressor Equipment.

Construction work, in connection with the new terminal at Balboa, requires additional facilities for the supplying of compressed air, and to this end, one air compressor and one boiler will be transferred from Las Cascadas and installed in the plant at Balboa, which, with the two small compressors already there will, in part, relieve the situation. It is probable that by October 1 work in the Central Division will have advanced sufficiently to permit the transfer of one compressor and two

boilers remaining at Las Cascadas, to Balboa, which will furnish an adequate supply of compressed air at a proper working pressure for all purposes. For the present, however, the additional equipment will be used in furnishing air mainly to the 20 tripod drills now engaged in the terminal work, while the well drills and small concrete mixers to be set up, will have to be operated by steam. The transfer of the machinery, which is in charge of the Mechanical Division, will necessitate the construction of a spur track leading from the nearest available track in the East Balboa yard to the compressor plant.

New Break in West Bank at Culebra.

Another break occurred in the west bank of the Canal at Culebra, near where the observation platform formerly stood, about midnight, Monday, August 26. The section of the bank that gave way consisted of a projecting mass, which settled, and, following the usual course, heaved up in the bottom of the Cut. The material overflowed one of the construction tracks, and partly buried steamshovel No. 219, but when the machine was freed, it was found to be only slightly damaged. The amount of material involved in this break, which in reality forms a part of the main break on the west bank at Culebra, is estimated at about 900,000 cubic yards.

The situation in the Cut, north of Empire, where a break occurred in the Obispo Diversion on August 20, is well under control, and construction trains began operating out of the north end on Wednesday, August 28. A temporary dike has been built across the bottom of the Cut, and the trains will use it in passing around the toe of the slide. The dike serves the additional purpose of keeping the water that escapes from the diversion channel, while it is being relocated, from finding its way through the Cut southward. One pump, mounted on a flat car, operated by steam supplied by locomotives, has been kept in operation continuously since the day of the slide, and has unwatered the greater part of the inundated section, emptying the water into the drainage ditch on the north side of the dike. A steamshovel has been working day and night excavating a new channel for the diversion. The slope of the hill back of the former channel is very abrupt, and in making the new one, the excavation is wholly in the side of this hill, the material removed being dumped on the opposite side to form a retaining wall for the relocated diversion. A cross-section measurement of the break shows that about 300,000 cubic yards of material will have to be taken out at this point.

Reconstruction of Culebra Clubhouse.

The continued breaking back of a slide on the west bank of Culebra Cut, from Station 1726 to Station 1804, has developed large cracks in the earth beneath the Commission clubhouse at Culebra, and the north end of

the building has moved 19 inches toward the Cut, despite the shoring timbers with which it has been repeatedly jacked up. Notice has been posted at the front of the clubhouse, warning all who would enter that it shall be at their own risk, and work has begun on reconstructing the building for safety. All of the heavy, two-story front part is to be removed. The bowling alley and adjacent tourists' platform, comprised in a one-story structure, will be left in the present location, and the part of the two-story structure occupied by the kitchen and serving space will be reduced to one story. Definite plans in regard to the erection of a reading, pool and billiard, and assembly room cannot be announced until the advisory committee has acted on this matter.

Progress on Gatun Dam.

The inner sides of the north and south toes of the west wing of Gatun Dam were brought together at the junction of that wing of the Dam with the concrete Spillway approach channel on August 24. In the process of dumping on the two sides of the hydraulic core the toes have been brought closer together, while the surface of the hydraulic fill has been rising; and, as the latter was on the point of flowing over the top of the wall of the Spillway approach channel, dry filling on the toes was concentrated near the wall for two weeks, in order to form an embankment to retain the hydraulic fill at levels higher than the top of the channel wall. The top of the wall is at elevation plus 95 feet, and the surface of the hydraulic fill in the west wing of the Dam is now at 90 feet above sealevel. Hydraulic filling is practically completed, and the Dam will be finished with dry fill, which will be carried on all along the upper sides of the north and south toes, which are now, on an average, about 100 feet apart.

On the east wing of the Dam, where the toes were first brought together during the month of March, 1912, they are now together for a distance of over 1,000 feet, from the Spillway channel toward the Locks. The top of the Dam has been brought to elevation plus 103.35 feet, but after the Dam has settled, the top will be graded, so that the eventual height will be 105 feet above sealevel. Additional filling is being made about halfway up the side of the north toe, to bring its surface to the grades prescribed in the plans.

Steamship "Pleiades" Aground.

The Balboa office of the California-Atlantic Steamship Company was advised by cable on August 24 that the steamship *Pleiades*, plying in the service of the company between San Francisco and Balboa, was aground on the coast of Mexico. Particulars as to location, possible loss of life, and salvage measures have not been received. It is presumed that, as the vessel was about five days out from San Francisco, the wreck occurred along the Low-

(Continued.)

Gatun Dam Spillway.

Ancon Crusher.

Postal Business and Canal Zone Revenues.

Preliminary Report on Dock Accident.

GATUN LOCKS.

*The twenty yards of concrete "hand mixed" are reinforced, and were placed on the following days: August 20, five yards; August 21, eight yards, August 22, seven yards.

PEDRO MIGUEL LOCK.

MIRAFLORES LOCKS.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.								Total.
				2-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.		
	<i>Cu.Yds.</i>			<i>Cu.Yds.</i>			<i>Cu.Yds.</i>				<i>Cu.Yds.</i>	<i>Cu.Yds.</i>
August 19.	848	37.00	7	1,244	17.60	2	505	58.50	8			2,597
August 20.	1,144	33.58	7	1,424	19.86	2	400	44.00	6			2,968
August 21.	1,120	39.67	7	1,242	17.75	2	489	46.00	7			2,851
August 22.	1,368	42.42	7	1,422	19.33	2	542	48.00	6			3,332
August 23.	1,290	36.50	7	1,406	19.00	2	321	30.50	4			3,017
August 24.	816	30.08	7	1,372	19.42	2	334	34.50	5			2,522
Total ..	6,586	219.25	7	8,110	112.90	2	2,591	261.50	6			17,287
Previously reported ..											3,693	1,157,404
Grand total ..											3,693	1,174,691

NEW CANAL LAW.

Full Text of the Measure Made a Law by President's Signature on August 24.

The following is the full text of the new Canal law, which was signed by President Taft on August 24:

AN ACT TO provide for the opening, maintenance, protection, and operation of the Panama Canal, and the sanitation and government of the Canal Zone.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the zone of land and land under water of the width of ten miles extending to the distance of five miles on each side of the center line of the route of the Canal now being constructed thereon, which zone begins in the Caribbean Sea three marine miles from mean low water mark and extends to and across the Isthmus of Panama into the Pacific Ocean to the distance of three marine miles from mean low water mark, excluding therefrom the cities of Panama and Colon and their adjacent harbors located within said zone, as excepted in the treaty with the Republic of Panama dated November eighteenth, nineteen hundred and three, but including all islands within said described zone, and in addition thereto the group of islands in the Bay of Panama named Perico, Naos, Culebra, and Flamenco, and lands and waters outside of said limits above described which are necessary or convenient or from time to time may become necessary or convenient for the construction, maintenance, operation, sanitation, or protection of the said Canal or of any auxiliary canals, lakes, or other works necessary or convenient for the construction, maintenance, operation, sanitation, or protection of said Canal, the use, occupancy, or control whereof were granted to the United States by the treaty between the United States and the Republic of Panama, the ratifications of which were exchanged on the twenty-sixth day of February, nineteen hundred and four, shall be known and designated as the Canal Zone, and the Canal now being constructed thereon shall hereafter be known and designated as the Panama Canal. The President is authorized by treaty with the Republic of Panama to acquire any additional land or land under water not already granted, or which was excepted from the grant, that he may deem necessary for the operation, maintenance, sanitation, or protection of the Panama Canal, and to exchange any land or land under water not deemed necessary for such purpose for other land or land under water which may be deemed necessary for such purposes, which additional land or land under water so acquired shall become part of the Canal Zone.

Section 2. That all laws, orders, regulations, and ordinances adopted and promulgated in the Canal Zone by order of the President for the government and sanitation of the Canal Zone and the construction of the Panama Canal are hereby ratified and confirmed as valid and binding until Congress shall otherwise provide. The existing courts established in the Canal Zone by Executive Order are recognized and confirmed to continue in operation until the courts provided for in this Act shall be established.

Section 3. That the President is authorized to declare by Executive Order that all land and land under water within the limits of the Canal Zone is necessary for the construction, maintenance, operation, sanitation, or protection of the Panama Canal, and to extinguish, by agreement when advisable, all claims and titles of adverse claimants and occupants. Upon failure to secure by agreement title to any such parcel of land or land under water the adverse claim or occupancy shall be disposed of and title thereto secured in the United States and compensation therefor fixed and paid in the manner provided in the aforesaid treaty with the Republic of

Panama, or such modification of such treaty as may hereafter be made.

Section 4. That when in the judgment of the President the construction of the Panama Canal shall be sufficiently advanced toward completion to render the further services of the Isthmian Canal Commission unnecessary the President is authorized by Executive Order to discontinue the Isthmian Canal Commission, which, together with the present organization, shall then cease to exist; and the President is authorized thereafter to complete, govern, and operate the Panama Canal and govern the Canal Zone, or cause them to be completed, governed, and operated, through a governor of the Panama Canal and such other persons as he may deem competent to discharge the various duties connected with the completion, care, maintenance, sanitation, operation, government, and protection of the Canal and Canal Zone. If any of the persons appointed or employed as aforesaid shall be persons in the military or naval service of the United States, the amount of the official salary paid to any such person shall be deducted from the amount of salary or compensation provided by or which shall be fixed under the terms of this Act. The governor of the Panama Canal shall be appointed by the President, by and with the advice and consent of the Senate, commissioned for a term of four years, and until his successor shall be appointed and qualified. He shall receive a salary of ten thousand dollars a year. All other persons necessary for the completion, care, management, maintenance, sanitation, government, operation, and protection of the Panama Canal and Canal Zone shall be appointed by the President or by his authority, removable at his pleasure, and the compensation of such persons shall be fixed by the President, or by his authority, until such time as Congress may by law regulate the same, but salaries or compensation fixed hereunder by the President shall in no instance exceed by more than twenty-five per centum the salary or compensation paid for the same or similar services to persons employed by the Government in continental United States; that upon the completion of the Panama Canal the President shall cause the same to be officially and formally opened for use and operation.

Before the completion of the Canal the Commission of Arts may make report to the President of their recommendation regarding the artistic character of the structures of the Canal, such report to be transmitted to Congress.

Section 5. That the President is hereby authorized to prescribe and from time to time change the tolls that shall be levied by the Government of the United States for the use of the Panama Canal: *Provided*, That no tolls, when prescribed as above, shall be changed, unless six months' notice thereof shall have been given by the President by proclamation. No tolls shall be levied upon vessels engaged in the coastwise trade of the United States. That section forty-one hundred and thirty-two of the Revised Statutes is hereby amended to read, as follows:

"Section 4132. Vessels built within the United States and belonging wholly to citizens thereof, and vessels which may be captured in war by citizens of the United States and lawfully condemned as prize, or which may be adjudged to be forfeited for a breach of the laws of the United States, and seagoing vessels, whether steam or sail, which have been certified by the Steamboat Inspection Service as safe to carry dry and perishable cargo, not more than five years old at the time they apply for registry, wherever built, which are to engage only in trade with foreign countries or with the Philippine Islands and the islands of Guam and Tutuila, being wholly owned by citizens of the United States or corporations organized and chartered under the laws of the United States or of any State thereof, the president and managing directors

of which shall be citizens of the United States, and no others, may be registered as directed in this title. Foreign built vessels registered pursuant to this Act shall not engage in the coastwise trade: *Provided*, That a foreign built yacht, pleasure boat, or vessel, not used or intended to be used for trade, admitted to American registry pursuant to this section, shall not be exempt from the collection of *ad valorem* duty provided in section thirty-seven of the Act approved August fifth, nineteen hundred and nine, entitled 'An Act to provide revenue, equalize duties, and encourage the industries of the United States, and for other purposes.' That all materials of foreign production which may be necessary for the construction or repair of vessels built in the United States and all such materials necessary for the building or repair of their machinery, and all articles necessary for their outfit and equipment may be imported into the United States free of duty under such regulations as the Secretary of the Treasury may prescribe: *Provided further*, That such vessels so admitted under the provisions of this section may contract with the Postmaster General, under the Act of March third, eighteen hundred and ninety-one, entitled 'An Act to provide for ocean mail service between the United States and foreign ports, and to promote commerce,' so long as such vessels shall in all respects comply with the provisions and requirements of said Act. Tolls may be based upon gross or net registered tonnage, displacement tonnage, or otherwise, and may be based on one form of tonnage for warships and another for ships of commerce. The rate of tolls may be lower upon vessels in ballast than upon vessels carrying passengers or cargo. When based upon net registered tonnage for ships of commerce, the tolls shall not exceed one dollar and twenty-five cents per net registered ton, nor be less, other than for vessels of the United States and its citizens, than the estimated proportionate cost of the actual maintenance and operation of the Canal, subject, however, to the provisions of article nineteen of the convention between the United States and the Republic of Panama, entered into November eighteenth, nineteen hundred and three. If the tolls shall not be based upon net registered tonnage, they shall not exceed the equivalent of one dollar and twenty-five cents per net registered ton as nearly as the same may be determined, nor be less than the equivalent of seventy-five cents per net registered ton. The toll for each passenger shall not be more than one dollar and fifty cents. The President is authorized to make, and from time to time amend, regulations governing the operation of the Panama Canal, and the passage and control of vessels through the same or any part thereof, including the locks and approaches thereto, and all rules and regulations affecting pilots and pilotage in the Canal or the approaches thereto through the adjacent waters.

Such regulations shall provide for prompt adjustment by agreement and immediate payment of claims for damages which may arise from injury to vessels, cargo, or passengers from the passing of vessels through the locks under the control of those operating them under such rules and regulations. In case of disagreement, suit may be brought in the district court of the Canal Zone against the governor of the Panama Canal. The hearing and disposition of such cases shall be expedited, and the judgment shall be immediately paid out of any moneys appropriated or allotted for Canal operation.

The President shall provide a method for the determination and adjustment of all claims arising out of personal injuries to employees thereafter occurring while directly engaged in actual work in connection with the construction, maintenance, operation, or sanitation of the Canal or of the Panama railroad, or of any auxiliary canals, locks, or other

works necessary and convenient for the construction, maintenance, operation, or sanitation of the Canal, whether such injuries result in death or not, and prescribe a schedule of compensation therefor, and may revise and modify such method and schedule at any time; and such claims to the extent they shall be allowed on such adjustment, if allowed at all, shall be paid out of the moneys hereafter appropriated for that purpose or out of the funds of the Panama Railroad Company, if said company was responsible for said injury, as the case may require. And after such method and schedule shall be provided by the President the provisions of the Act entitled "An Act granting to certain employees of the United States the right to receive from it compensation for injuries sustained in the course of their employment," approved May thirtieth, nineteen hundred and eight, and of the Act entitled "An Act relating to injured employees on the Isthmian Canal," approved February twenty-fourth, nineteen hundred and nine, shall not apply to personal injuries thereafter received and claims for which are subject to determination and adjustment as provided in this section.

Section 6. That the President is authorized to cause to be erected, maintained, and operated, subject to the international convention and the Act of Congress to regulate radio communication, at suitable places along the Panama Canal and the coast adjacent to its two terminals, in connection with the operation of said Canal, such wireless telegraphic installations as he may deem necessary for the operation, maintenance, sanitation, and protection of said Canal, and for other purposes. If it is found necessary to locate such installations upon territory of the Republic of Panama, the President is authorized to make such agreement with said Government as may be necessary, and also to provide for the acceptance and transmission, by said system, of all private and commercial messages, and those of the Government of Panama, on such terms and for such tolls as the President may prescribe: *Provided*, That the messages of the Government of the United States and the departments thereof, and the management of the Panama Canal, shall always be given precedence over all other messages. The President is also authorized, in his discretion, to enter into such operating agreements or leases with any private wireless company or companies as may best insure freedom from interference with the wireless telegraphic installations established by the United States. The President is also authorized to establish, maintain, and operate, through the Panama Railroad Company or otherwise, drydocks, repair shops, yards, docks, wharves, warehouses, storehouses, and other necessary facilities and appurtenances for the purpose of providing coal and other materials, labor, repairs, and supplies for vessels of the Government of the United States and, incidentally, for supplying such at reasonable prices to passing vessels, in accordance with appropriations hereby authorized to be made from time to time by Congress as a part of the maintenance and operation of the said Canal. Moneys received from the conduct of said business may be expended and reinvested for such purposes without being covered into the Treasury of the United States; and such moneys are hereby appropriated for such purposes, but all deposits of such funds shall be subject to the provisions of existing law relating to the deposit of other public funds of the United States, and any net profits accruing from such business shall annually be covered into the Treasury of the United States. Monthly reports of such receipts and expenditures shall be made to the President by the persons in charge, and annual reports shall be made to the Congress.

Section 7. That the governor of the Panama Canal shall, in connection with the opera-

tion of such Canal, have official control and jurisdiction over the Canal Zone and shall perform all duties in connection with the civil government of the Canal Zone, which is to be held, treated, and governed as an adjunct of such Panama Canal. Unless in this Act otherwise provided all existing laws of the Canal Zone referring to the civil governor or the civil administration of the Canal Zone shall be applicable to the governor of the Panama Canal, who shall perform all such executive and administrative duties required by existing law. The President is authorized to determine or cause to be determined what towns shall exist in the Canal Zone and subdivide and from time to time resubdivide said Canal Zone into subdivisions, to be designated by name or number, so that there shall be situated one town in each subdivision, and the boundaries of each subdivision shall be clearly defined. In each town there shall be a magistrate's court with exclusive original jurisdiction coextensive with the subdivision in which it is situated of all civil cases in which the principal sum claimed does not exceed three hundred dollars, and all criminal cases wherein the punishment that may be imposed shall not exceed a fine of one hundred dollars or imprisonment not exceeding thirty days, or both, and all violations of police regulations and ordinances and all actions involving possession or title to personal property or the forcible entry and detainer of real estate. Such magistrates shall also hold preliminary investigations in charges of felony and offenses under section ten of this Act, and commit or bail in bailable cases to the district court. A sufficient number of magistrates and constables, who must be citizens of the United States, to conduct the business of such courts shall be appointed by the governor of the Panama Canal for terms of four years and until their successors are appointed and qualified, and the compensation of such persons shall be fixed by the President, or by his authority, until such time as Congress may by law regulate the same. The rules governing said courts and prescribing the duties of said magistrates and constables, oaths and bonds, the times and places of holding such courts, the disposition of fines, costs, forfeitures, enforcements of judgments, providing for appeals therefrom to the district court, and the disposition, treatment, and pardon of convicts shall be established by order of the President. The governor of the Panama Canal shall appoint all notaries public, prescribe their powers and duties, their official seal, and the fees to be charged and collected by them.

Section 8. That there shall be in the Canal Zone one district court with two divisions, one including Balboa and the other including Cristobal; and one district judge of the said district, who shall hold his court in both divisions at such time as he may designate by order, at least once a month in each division. The rules of practice in such district court shall be prescribed or amended by order of the President. The said district court shall have original jurisdiction of all felony cases, of offenses arising under section ten of this Act, all causes in equity, admiralty, and all cases at law involving principal sums exceeding three hundred dollars and all appeals from judgments rendered in magistrates' courts. The jurisdiction in admiralty herein conferred upon the district judge and the district court shall be the same that is exercised by the United States district judges and the United States district courts, and the procedure and practice shall also be the same. The district court or the judge thereof shall also have jurisdiction of all other matters and proceedings not herein provided for which are now within the jurisdiction of the Supreme Court of the Canal Zone, of the Circuit Court of the Canal Zone, the District Court of the Canal Zone, or the judges thereof. Said judge shall provide for the selection, summoning, serving,

and compensation of jurors from among the citizens of the United States, to be subject to jury duty in either division of such district, and a jury shall be had in any criminal case or civil case at law originating in said court on the demand of either party. There shall be a district attorney and a marshal for said district. It shall be the duty of the district attorney to conduct all business, civil and criminal, for the Government, and to advise the governor of the Panama Canal on all legal questions touching the operation of the Canal and the administration of civil affairs. It shall be the duty of the marshal to execute all process of the court, preserve order therein, and do all things incident to the office of marshal. The district judge, the district attorney, and the marshal shall be appointed by the President, by and with the advice and consent of the Senate, for terms of four years each, and until their successors are appointed and qualified, and during their terms of office shall reside within the Canal Zone, and shall hold no other office, nor serve on any official board or commission, nor receive any emoluments except their salaries. The district judges shall receive the same salary paid the district judges of the United States, and shall appoint the clerk of said court, and may appoint one assistant when necessary, who shall receive salaries to be fixed by the President. The district judge shall be entitled to six weeks' leave of absence each year with pay. During his absence, or during any period of disability or disqualification from sickness or otherwise to discharge his duties, the same shall be temporarily performed by any circuit or district judge of the United States who may be designated by the President, and who, during such service, shall receive the additional mileage and per diem allowed by law to district judges of the United States when holding court away from their homes. The district attorney and the marshal shall be paid each a salary of five thousand dollars per annum.

Section 9. That the records of the existing courts and all causes, proceedings, and criminal prosecutions pending therein, as shown by the dockets thereof, except as herein otherwise provided, shall immediately upon the organization of the courts created by this Act be transferred to such new courts having jurisdiction of like cases, be entered upon the dockets thereof, and proceed as if they had originally been brought therein, whereupon all the existing courts, except the Supreme Court of the Canal Zone, shall cease to exist. The President may continue the Supreme Court of the Canal Zone and retain the judges thereof in office for such time as to him may seem necessary to determine finally any causes and proceedings which may be pending therein. All laws of the Canal Zone imposing duties upon the clerks or ministerial officers of existing courts shall apply and impose such duties upon the clerks and ministerial officers of the new courts created by this Act having jurisdiction of like cases, matters, and duties.

All existing laws in the Canal Zone governing practice and procedure in existing courts shall be applicable and adapted to the practice and procedure in the new courts.

The Circuit Court of Appeals of the Fifth Circuit of the United States shall have jurisdiction to review, revise, modify, reverse, or affirm the final judgments and decrees of the District Court of the Canal Zone and to render such judgments as in the opinion of the said appellate court should have been rendered by the trial court in all actions and proceedings in which the Constitution, or any statute, treaty, title, right, or privilege of the United States, is involved and a right thereunder denied, and in cases in which the value in controversy exceeds one thousand dollars, to be ascertained by the oath of either party, or by other competent evidence, and also in criminal causes wherein the offense charged is punishable as a felony. And such appellate jurisdiction, subject to the right of review by or

appeal to the Supreme Court of the United States as in other cases authorized by law, may be exercised by said circuit court of appeals in the same manner, under the same regulations, and by the same procedure as nearly as practicable as is done in reviewing the final judgments and decrees of the district courts of the United States.

Section 10. That after the Panama Canal shall have been completed and opened for operation the governor of the Panama Canal shall have the right to make such rules and regulations, subject to the approval of the President, touching the right of any person to remain upon or pass over any part of the Canal Zone as may be necessary. Any person violating any of such rules or regulations shall be guilty of a misdemeanor, and on conviction in the District Court of the Canal Zone shall be punished by a fine not exceeding five hundred dollars or by imprisonment not exceeding a year, or both, in the discretion of the court. It shall be unlawful for any person, by any means or in any way, to injure or obstruct, or attempt to injure or obstruct, any part of the Panama Canal or the locks thereof or the approaches thereto. Any person violating this provision shall be guilty of a felony, and on conviction in the District Court of the Canal Zone shall be punished by a fine not exceeding ten thousand dollars or by imprisonment not exceeding twenty years, or both, in the discretion of the court. If the act shall cause the death of any person within a year and a day thereafter, the person so convicted shall be guilty of murder and shall be punished accordingly.

Section 11. That section five of the Act to regulate commerce, approved February fourth, eighteen hundred and eighty-seven, as heretofore amended, is hereby amended by adding thereto a new paragraph at the end thereof, as follows:

"From and after the first day of July, nineteen hundred and fourteen, it shall be unlawful for any railroad company or other common carrier subject to the Act to regulate commerce to own, lease, operate, control, or have any interest whatsoever (by stock ownership or otherwise, either directly, indirectly, through any holding company, or by stockholders or directors in common, or in any other manner) in any common carrier by water operated through the Panama Canal or elsewhere with which said railroad or other carrier aforesaid does or may compete for traffic, or any vessel carrying freight or passengers upon said water route or elsewhere; and in case of the violation of this provision each day in which such violation continues shall be deemed a separate offense."

Jurisdiction is hereby conferred on the Interstate Commerce Commission to determine questions of fact as to the competition or possibility of competition, after full hearing, on the application of any railroad company or other carrier. Such application may be filed for the purpose of determining whether any existing service is in violation of this section and pray for an order permitting the continuance of any vessel or vessels already in operation, or for the purpose of asking an order to install new service not in conflict with the provisions of this paragraph. The commission may on its own motion or the application of any shipper institute proceedings to inquire into the operation of any vessel in use by any railroad or other carrier which has not applied to the commission and had the question of competition or the possibility of competition determined as herein provided. In all such cases the order of said commission shall be final. If the Interstate Commerce Commission shall be of the opinion that any such existing specified service by water other than through the Panama Canal is being operated in the interest of the public and is of advantage to the convenience and commerce of the people and that such extension will neither exclude, prevent, nor re-

duce competition on the route by water under consideration, the Interstate Commerce Commission may, by order, extend the time during which such service by water may continue to be operated beyond July first, nineteen hundred and fourteen. In every case of such extension the rates, schedules, and practices of such water carrier shall be filed with the Interstate Commerce Commission and shall be subject to the Act to regulate commerce and all amendments thereto in the same manner and to the same extent as is the railroad or other common carrier controlling such water carrier or interested in any manner in its operation: *Provided*, Any application for extension under the terms of this provision filed with the Interstate Commerce Commission prior to July first, nineteen hundred and fourteen, but for any reason not heard and disposed of before said date may be considered and granted thereafter.

No vessel permitted to engage in the coastwise or foreign trade of the United States shall be permitted to enter or pass through said Canal if such ship is owned, chartered, operated, or controlled by any person or company which is doing business in violation of the provisions of the Act of Congress approved July second, eighteen hundred and ninety, entitled "An Act to protect trade and commerce against unlawful restraints and monopolies," or the provisions of sections seventy-three to seventy-seven, both inclusive, of an Act approved August twenty-seventh, eighteen hundred and ninety-four, entitled "An Act to reduce taxation, to provide revenue for the Government, and for other purposes," or the provisions of any other Act of Congress amending or supplementing the said Act of July second, eighteen hundred and ninety, commonly known as the Sherman Antitrust Act, and amendments thereto, or said sections of the Act of August twenty-seventh, eighteen hundred and ninety-four. The question of fact may be determined by the judgment of any court of the United States of competent jurisdiction in any cause pending before it to which the owners or operators of such ship are parties. Suit may be brought by any shipper or by the Attorney General of the United States.

That section six of said Act to regulate commerce, as heretofore amended, is hereby amended by adding a new paragraph at the end thereof, as follows:

"When property may be or is transported from point to point in the United States by rail and water through the Panama Canal or otherwise, the transportation being by a common carrier or carriers, and not entirely within the limits of a single State, the Interstate Commerce Commission shall have jurisdiction of such transportation and of the carriers, both by rail and by water, which may or do engage in the same, in the following particulars, in addition to the jurisdiction given by the Act to regulate commerce, as amended June eighteenth, nineteen hundred and ten:

"(a) To establish physical connection between the lines of the rail carrier and the dock of the water carrier by directing the rail carrier to make suitable connection between its line and a track or tracks which have been constructed from the dock to the limits of its right of way, or by directing either or both the rail and water carrier, individually or in connection with one another, to construct and connect with the lines of the rail carrier a spur track or tracks to the dock. This provision shall only apply where such connection is reasonably practicable, can be made with safety to the public, and where the amount of business to be handled is sufficient to justify the outlay.

"The commission shall have full authority to determine the terms and conditions upon which these connecting tracks, when constructed, shall be operated, and it may, either in the construction or the operation of such tracks, determine what sum shall be paid to or

by either carrier. The provisions of this paragraph shall extend to cases where the dock is owned by other parties than the carrier involved.

"(b) To establish through routes and maximum joint rates between and over such rail and water lines, and to determine all the terms and conditions under which such lines shall be operated in the handling of the traffic embraced.

"(c) To establish maximum proportional rates by rail to and from the ports to which the traffic is brought, or from which it is taken by the water carrier, and to determine to what traffic and in connection with what vessels and upon what terms and conditions such rates shall apply. By proportional rates are meant those which differ from the corresponding local rates to and from the port and which apply only to traffic which has been brought to the port or is carried from the port by a common carrier by water.

"(d) If any rail carrier subject to the Act to regulate commerce enters into arrangements with any water carrier operating from a port in the United States to a foreign country, through the Panama Canal or otherwise, for the handling of through business between interior points of the United States and such foreign country, the Interstate Commerce Commission may require such railway to enter into similar arrangements with any or all other lines of steamships operating from said port to the same foreign country."

The orders of the Interstate Commerce Commission relating to this section shall only be made upon formal complaint or in proceedings instituted by the commission of its own motion and after full hearing. The orders provided for in the two amendments to the Act to regulate commerce enacted in this section shall be served in the same manner and enforced by the same penalties and proceedings as are the orders of the commission made under the provisions of section fifteen of the Act to regulate commerce, as amended June eighteenth, nineteen hundred and ten, and they may be conditioned for the payment of any sum or the giving of security for the payment of any sum or the discharge of any obligation which may be required by the terms of said order.

Section 12. That all laws and treaties relating to the extradition of persons accused of crime in force in the United States, to the extent that they may not be in conflict with or superseded by any special treaty entered into between the United States and the Republic of Panama with respect to the Canal Zone, and all laws relating to the rendition of fugitives from justice as between the several States and Territories of the United States, shall extend to and be considered in force in the Canal Zone, and for such purposes and such purposes only the Canal Zone shall be considered and treated as an organized Territory of the United States.

Section 13. That in time of war in which the United States shall be engaged, or when, in the opinion of the President, war is imminent, such officer of the Army as the President may designate shall, upon the order of the President, assume and have exclusive authority and jurisdiction over the operation of the Panama Canal and all of its adjuncts, appendants, and appurtenances, including the entire control and government of the Canal Zone, and during a continuance of such condition the governor of the Panama Canal shall, in all respects and particulars as to the operation of such Panama Canal, and all duties, matters, and transactions affecting the Canal Zone, be subject to the order and direction of such officer of the Army.

Section 14. That this Act shall be known as, and referred to as, the Panama Canal Act, and the right to alter, amend, or repeal any or all of its provisions or to extend, modify, or annul any rule or regulation made under its authority is expressly reserved.

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

There will be a meeting of the Executive Board of the Canal Zone Federation of Women's Clubs at Cristobal on Friday afternoon, August 30.

The report has been received that the Federation protégé, Elysium James, the blind boy who was sent to receive one year's schooling at the Perkins Institute for the Blind at Boston, has arrived in that city and will enter the school in September.

The Cristobal Woman's Club has completed its year book and the copy is now in the hands of the printer. The book will be issued at the opening of the club on September 28.

The Ancon Study Club began its study of Shakespeare at the meeting on Friday, August 16. The course will extend over several months.

Church Work.

Probably for the first time in the history of the See, the consecration of a bishop for the bishopric of Panama, took place in the Panama cathedral on Sunday morning, August 18. The Rt. Rev. Gaspard Stork, the bishop of Costa Rica, was the officiant, and the bishop-elect was the Rev. Dr. William Rojas, priest of the Order of St. Vincent. The ceremony was carried out according to the ancient rites of the Roman Catholic Church, but on account of local conditions, slight divergences were permitted, chief among these being the attendance upon the consecrating bishop of two priests in the place of two bishops, as required by the canonical law. Besides the six priests in attendance upon the two bishops, there were present in the chancel twelve of the local clergy, several brothers in orders, and one layman, or server. Among the priests were the superior of the Jesuits of the college of Panama, and a visitor of the Salaisan Fathers of Costa Rica. At 9 o'clock, the procession of priests, acolytes, the bishop of Costa Rica, and the bishop-elect crossed the square from the palace to the cathedral, and at 11 o'clock, when the ceremony was concluded by the singing of the *Te Deum* and the *Credo*, the procession reformed, headed by the two bishops, preceded by their symbols of office. The bishop of Costa Rica arrived in Panama on Monday, August 12, and took up his residence in the episcopal palace in Cathedral Square. He was accompanied by two priests and one layman from the cathedral in San José. He left for Costa Rica on the *Turrialba*, on Tuesday, August 20.

On Saturday evening August 31, the local council, Knights of Columbus, No. 1371, will hold a banquet at the Hotel Tivoli in honor of the new bishop of Panama, Monseigneur Rojas.

The parish of St. Ferdinand, Empire, celebrated the first anniversary of the opening and blessing of the parish house on Sunday, August 25. The ceremony took place after the mass. Since the opening of this house, the interest in the social activities of the parish has greatly increased. Several fairs, banquets, and other social entertainments have been held there, and the meetings of the church, societies, and guilds are weekly events in the life of the parish. A school for children has been opened in the basement of the building.

The next meeting of the Woman's Altar Guild of St. Luke's Hospital chapel, Ancon, will be held at the Hotel Tivoli on Tuesday

morning, September 3. This is the monthly business meeting and it is urgently requested that all active members be present.

Gatun Sunshine Society.

The Gatun Sunshine Society held a "home baked" supper in the Commission chapel on Thursday evening, August 22. The supper consisted of baked beans, brown bread, salad, and coffee. The patronage was large and the net receipts amounted to \$50. A similar entertainment is planned to be given about Thanksgiving time. At an election of officers for the society held early this month, the following were chosen: President, Mrs. Jervy; vice-president, Mrs. Wood; secretary, Mrs. Wagner; treasurer, Mrs. Fortney. These officers will serve for one year. The next meeting of the sunshine society will be held on Wednesday, September 4.

Admission to Examinations.

Attention is invited to the fact that a card of admission will be sent by this office to each applicant for civil service examination found to be eligible to be admitted to examination, immediately after the receipt of the examination questions from the Civil Service Commission, when a date of examination can be definitely fixed. No person should report at Culebra for examination before receiving a card of admission, or, in case such a notice has not been received, before having previously ascertained by telephone, or otherwise, the date on which the desired examination is scheduled to be held. Such a request should not be made except on the day before the date on which it is understood an examination is to be held, as occasionally it happens that the questions arrive only a day or two before the scheduled date.

ISTHMIAN CIVIL SERVICE BOARD.

Culebra, C. Z., August 24, 1912.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon during the two weeks ending August 24:

Carrillo, August 11, from New York with 36 packages castings for superintendent of erection; 1 crate electrical material, for Pacific Division; 2 cases steel, 8 cases gate machinery, for emergency dam; 3 cases varnish, 16 kegs nails and washers, 8 coils rope, 13 cases rubber hose, for stock.

Tagus, August 11, from New York, with 196 pieces heel beams, for Panama railroad; 3 barrels brass cocks, 4 cases hardware, for stock.

Ormesby, August 12, from Brunswick, Ga., with 40,500 pieces cross-ties, for stock.

Cristobal, August 13, from New York, with 1 piece casting, for Empire store; 6 cases metal treads, for Panama railroad; 58 cases seal devices, for superintendent erection; 672 bundles steel, for Pacific Division; 1 launch, for Quarantine Officer; 119,919 bags cement, for Atlantic and Pacific Divisions; 2 cases machinery, for Mechanical Division; 1,327 bundles galvanized sheet iron, 63 bundles galvanized sheet iron, 240 barrels coal tar, 3 cases wrenches, 34 cases graphite, 5 crates fire brick, 12 pieces steel plates, 117 cases coolers, for stock.

Prinz Eitel Friedrich, August 13, from New York, with 112 bundles steel bolts, for fortifications; 70 cases paper, 16 drums lime, for stock.

Santa Maria, August 14, from New York, with six cases incandescent lamps, for Mechanical Division; 20 cases electric motors, five cases reflectors, four cases and six pieces traveling crane, for superintendent of erection; 12 crates stovepipe, for Pacific Division; three casks zinc, one case gaskets, six cases lanterns, for stock.

Parismina, August 15, from New Orleans, with 7,386 pieces yellow pine lumber, 209 pieces white oak lumber, for Mechanical Division; eight pieces white oak lumber, for Pacific Division; 50 pieces white oak lumber, for stock; 1,703 pieces yellow pine lumber, 149 pieces piling, one case sash tool brushes, 384 cases fire brick, two reels wire rope, two cases brushes, one case gauges

32 bundles shingles, 200 cases scouring soap, one case castings 228 drums oils, for stock; four crates and three bundles castings, for Panama Railroad Company; 908 bundles castings, for superintendent of erection; 51 cases brick, for Mechanical Division.

Colon, August 15, from New York, with six cases machinery, for superintendent of erection; 30 pieces engine couplers, for Mechanical Division; 30 pieces rough castings, 10 cases chloride of lime, 110 kegs bolts, 15 cases varnish, 29 pigs tin, 35 coils lead pipe, 147 pieces steel plate, 40 pieces steel bars, 162 packages switches and fittings, 100 cases garbage cans, 67 bundles baskets, 11 cases brass valves, 334 bundles roofing iron, 130 drums paint, 20 cases wrapping paper, for stock; 11 cases electrical material, for Panama Railroad Company; and a miscellaneous cargo, the whole consisting of 1,440 packages, weighing 200 tons.

Turrialba, August 18, from New York, with 13 cases gate machinery, for superintendent of erection; 12: bales rubber hose, seven cases hardware, for stock.

Tricolor, August 19, from Puget Sound, with 3,000 sacks oats, 152,477 pieces Douglas fir lumber, for stock four pieces spud timber, for Atlantic Division.

Kiora, August 20, from New York, with 434 pieces structural steel, for Panama Railroad Company; 162 bundles rack castings, for superintendent of erection; 40 drums gasoline, for stock.

Metapan, August 21, from New York, with 108 cases window glass, 212 coils manila rope, 12 cases wire, 86 drums lime, for stock; 28 cases gearings, 55 packages electrical material, for superintendent of erection.

Thelma, August 21, from St. Mary's Ga., with 5,985 pieces yellow pine lumber, 765 pieces piling, for stock.

Abangarez, August 22, from New Orleans, with 15 crates iron boxes, 1,093 pieces lumber, 94 pieces piling, for stock; 7,465 pieces lumber for Mechanical Division; 621 pieces lumber, for Atlantic Division.

Advance, August 22, from New York, with 12 coils wire, 10 cases files, 20 bales cotton mops, 13 cases pipe wrenches, 400 crates garbage cans, 21 bales rubber hose, 208 kegs bolts, 83 pieces steel beams, 25 crates lavatories, 200 kegs white zinc, 100 barrels alum, 98 bales waste, 10 cases glassware, for stock; 41 barrels brick, for Mechanical Division; 261 bundles steel bars, for Pacific Division; 30 pieces locomotive tires, for Mechanical Division; 579 bundles steel bars, for superintendent of erection; and a miscellaneous cargo, the whole consisting of 2,350 packages, weighing 415 tons.

Misdirected Letters.

ANCON, C. Z., August 28, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts and may be secured upon request of the addressees:

Barcroft, Frederick T.	Melgord, Julius
Byram, Miss Mabel	Nelson, A. C.
Dooley, Alex.	Nicholas, Earl C.
Dunbar, Edward C.	Niebaner, Mrs. Mona R.
Fesmaught, Frank	Parsons, Mrs. Frank
Freeman, Chas.	Roquebert, C.
Freese, J. L.	Sinclair, W. Albert
Grist, Lee	Smith, Julius Cassius
Hall, Mrs. Gillian White	Stoney, Wm. E.
Hoze, Jos. B.	Strobridge, F. H.
Johnson, Mrs. Ina	Vantress, Cecil
Johnson, Dr. S.	Vaughn, Miss Thelma
Klaus, Wm.	Wallace, A. G.
Lewis, S.	Wechsler, M. Nathaniel
Lynn, Luiz	

LETTERS UNCALLED FOR AUGUST 21, 1912.

Armitage, A. W.	La Point, W. F.
Barker, Perry H.	Larson, A. W.
Bilbro, Claud W.	Lyons, J.
Bray, Mrs. Walter	MacMillan, Mrs. S. T.
Brennan, Earl C.	Martin, John W.
Brown, Nannie	Millikin, Redg.
Burris, Frank	Mitchell, J. P.
Christie, Miss Elsie	Mitchell, Joe
Coleman, Miss Henriette	Morris, Miss Mable
Cunningham, Thos. H.	Newbale, Michael
Darling, W.	Neder, Jr., Mandel
Davis, Miss Grace	Peay, Thomas
Deeds, E. F.	Powers, Tom
Downs, M.	Ross, Capt. Dan.
Dye, Miss Florence	Russell, J. D.
Gordon, Percival	St. Clair, Geo.
Greenwood, Miss Lova	Simmons, Mrs. C. O.
Hammond, Arthur	Simpson, Christopher M.
Hines, Stanley	Sobers, Charles
Hubley, Harry	Spinks, J. M.
Jackson, Richard	Will, James C.
Kershaw, J. B.	Wilson, Sam B.
Kilgour, J. R. (3)	Wittrig, Wm. E.
King, Sam.	Worthington, Henry R.
King, M. P.	Wright, Mrs. W. J.

Lost—On Panama railroad train between Panama and Gorgona, or between the railroad station and fire engine house in Gorgona, a gold bar pin set with pearls. Finder please return to Mrs. F. H. Townsend, house No. 122, East Balboa, and receive reward.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The greater part of the Culebra clubhouse has been declared unsafe, and it is likely that the work of demolishing the main part of the building will begin early in September. The bowling alleys, soda fountain, and a few other rooms connected with them will remain for the present thus accommodating a part of the activities. Definite plans as to future work will be announced within a few days.

The annual interassociation tenpin bowling tournament has been organized and the following officers elected: President, Mr. Dougherty of Culebra; secretary, Mr. Pinney of Empire; official scorer, Mr. King of Gorgona. The tournament will open on the first Saturday in October. The president, secretary, and official scorer constitute a committee to draw up a schedule, and will also act as a standing committee to settle any disputes that may arise. The length of the schedule will be decided by the various men composing the teams.

The annual interassociation basketball league will start early in October.

CULEBRA.

The informal social planned for Tuesday evening, and the program of the Hindoo entertainers to have been given on Friday evening, were cancelled, because of the condition of the building.

The local bigpin bowling tournament will continue until all the games are played. The standing is, as follows:

Team.	Won.	Lost.	P. C.
Exploders.....	2	7	.222
Wreckers.....	3	6	.333
Piledrivers.....	6	3	.667
Trackshifters.....	5	4	.447
Unloaders.....	6	3	.667
Spreaders.....	6	3	.667
Empire opposed Culebra in a bigpin bowling series Saturday evening and took three games. Scores:			
Empire.....	221 184 202	Cushing.....	124 153
Pinney.....	193 148 224	Mengel.....	157 154 171
Gustavson.....	127 192 166	Coppin.....	176 173 159
Grund.....	180 181 165	Tuleu.....	144
Goolsby.....	167 212 193	Anderson.....	144 165 170
Huson.....		Dougherty.....	178 160 190

Total.....888 917 950 799 776 843
Owing to the dismantling of the clubhouse, the basketball league games will not be played.

The following are the high scores for the week in bowling: Cushing, 200; Anderson, 211.

Highest games bowled for the gold medal were: Dougherty, 249, 214; Hobbs, 227; Mengel, 221, 208; Anderson, 212, 200; Coppin, 202.

EMPIRE.

It is expected that the bowling alleys will be ready for use by Tuesday, September 3. Two games remain to be bowled in the local league.

One dozen new tenpin bowling balls have been received from the United States.

A pool and billiard tournament will be started early in September. All wishing to enter are requested to hand their names to the pool room manager.

The standing of the local basketball tournament is, as follows:

	Won.	Lost.
English.....	4	2
Americans.....	4	2
Germans.....	1	3

The tie will be played off on Wednesday, August 28.

GORGONA.

New supplies for the pool and billiard room, and bowling alleys, have been ordered from the United States.

GATUN.

Moving pictures will be shown at Gatun on Friday evening, August 30. There will be a special music number for this night.

The regular monthly meeting of the executive council was held on Friday, August 23. The financial and statistical reports, as given by the clubhouse secretary, show the Gatun clubhouse to be in good condition. The membership has now reached a total of 415.

Joe Mitchell will have charge of the basketball practices until the new physical director arrives. Practice games will be held twice a week.

CRISTOBAL.

The next moving picture show will be held on Thursday night, August 29.

The Cristobal debating and literary club will resume its sessions beginning with a meeting Wednesday, September 4. The subject for debate at this meeting will be, "Resolved, That immigration should be further restricted." The membership in this club is open to all men interested in discussing topics of current interest

and literary betterment, and it is desired that all who can take an active interest in the work.

The local bowling league will close this week. At present, four of the six teams are practically tied for first honors. The following high scores were made by the local bowlers during the past week:

Tenpins—Barrett, 222, 212; Collins, 201; Bullard, 206; Vanderburg, 212; Buser, 204; Herrington, 205.
Duckpins—Bullard, 102; Cotton, C., 100.
Candlepins—Witmer, 100; Buser, 100; Carpenter, 101.

Rainfall from August 1 to 24, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>In.</i>		<i>In.</i>
Ancon.....	1.31	5	5.87
Balboa.....	1.51	5 & 6	5.94
*Miraflores.....	1.15	6	5.04
Pedro Miguel.....	2.04	19	7.90
Rio Grande.....	1.72	19	9.15
<i>Central Section—</i>			
Culebra.....	1.87	19	9.31
*Camacho.....	1.91	19	8.50
Empire.....	1.34	19	7.06
Gamboa.....	2.98	19	11.42
*Juan Mina.....	1.98	23	7.61
Alhajuela.....	1.72	6	9.58
*El Vigia.....	2.78	6	10.68
*Gorgona.....	4.00	19	10.25
*Frijoles.....	3.60	19	7.83
*Monte Lirio.....	2.19	19	5.56
<i>Atlantic Section—</i>			
Gatun.....	3.35	3	9.77
*Brazos Brook.....	3.01	19	10.59
Colon.....	2.45	19	6.92
†Porto Bello.....	2.61	21	18.93

*Standard rain gage—readings at 5 p. m., daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., August 23.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, August 24, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigia.	Alhajuela	Gamboa.	Gatun Lake.
Sun., August 18.....	128.0	94.0	46.6	32.4
Mon., August 19.....	130.0	95.6	49.2	33.2
Tues., August 20.....	127.8	94.3	48.5	33.9
Wed., August 21.....	129.6	93.0	45.7	34.2
Thurs., August 22.....	134.2	98.4	50.8	34.6
Fri., August 23.....	130.8	97.2	51.4	35.2
Sat., August 24.....	127.4	93.8	46.6	35.5
Height of low water to the nearest foot.....	125.0	91.0	44.0	

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending September 4, 1912. (75th meridian time):

DATE.	Low		High		Low	
	A.M.	A.M.	A.M.	P.M.	P.M.	P.M.
August 29.....		4.38	10.51	4.51	11.05	
August 30.....		5.07	11.24	5.22	11.37	
August 31.....		5.37	11.58	6.53		
			P.M.			
Sept. 1.....	12.10	6.10	12.32	6.27		
Sept. 2.....	12.44	6.45	1.10	7.05		
Sept. 3.....	1.22	7.25	1.53	7.48		
Sept. 4.....	2.05	8.08	2.43	8.40		

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Gatun, C. Z., Sunday, September 1, 1912. The program follows:

1. March—*Hero of the Isthmus*.....Lampe (Respectfully dedicated to Col. Geo. W. Goethals.)
2. Selection—*Woodland* (By request).....Luders
3. Waltz—*Tres Jolie*.....Waldteufel
4. Operatic potpourri—*The Broadway Review*.....Lampe (Extracts from the latest Broadway hits.)
5. Popular number.....Selected
6. Selection—*Robin Hood* (By request).....De Koven
7. Grand fantasia—*Home, Sweet Home, the World Around*.....Lampe
8. Medley—*In the Shadows*.....Williams
9. March—*Stars and Stripes*.....Souza

OLIVER KIMBALL, Acting Musical Director.

The next concert will be given at Corozal, C. Z., on September 8.

OFFICIAL CIRCULARS.

Accumulated Leave.

CULEBRA, C. Z., August 22, 1912.

CIRCULAR No. 132-M (Cross 279-E):

Heretofore, the rule followed in limiting the amount of leave which an employee may accumulate has been that an employee on the monthly roll may accumulate not to exceed eighty-four days' leave, even though he earned part of it by previous service on the hourly roll; and that an employee on the hourly roll may accumulate not to exceed fifty-six days' leave, even though he earned part of it by previous service on the monthly roll.

Hereafter, an employee may accumulate only the amount of leave earned in two consecutive years; provided, however, that decisions given in writing by this office in individual cases under the old rule prior to this date shall not be changed.

Cases have arisen where it would be to the advantage of an employee, who has served more than two years without taking a leave, to waive his claim to leave for certain periods of service. Such waivers, when made in writing, in proper form, will be accepted.

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Promotion of Steamshovel Cranemen.

CULEBRA, C. Z., August 22, 1912.

CIRCULAR No. 387-B:

Effective this date, one out of three positions as steamshovel engineer, to be filled, will be filled by the promotion of cranemen by seniority, as provided in Circular No. 387. Two out of each three positions will be filled by the employment of experienced engineers:

1. Who are already in the service as cranemen or in other capacities.
2. By appointment through the Washington Office.
3. Who are on the Isthmus open for engagement.

New employments will be made preferably by appointment through the Washington Office, unless the needs of the service make it necessary to secure engineers immediately on the Isthmus.

This change in the seniority promotion rights of cranemen, as given them in the circular above mentioned, is made at the request of the steamshovel men in a petition addressed to this office, and which is signed by a majority of the cranemen who would probably be promoted during the remaining stages of the work. It is stated in the petition that the motive which actuates them is the good of the service, in that it is realized that a proper standard of efficiency cannot be maintained by breaking in cranemen to fill all vacancies for engineers. The cranemen are especially commended for voluntarily surrendering a privilege for the more expeditious advancement of the work.

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Transfer of Tools, and Other Articles, with Equipment.

CULEBRA, C. Z., August 22, 1912.

CIRCULAR No. 370-C:

When a locomotive, locomotive crane, spreader, track shifter, or other piece of equipment is transferred from one division or department to another, there will be transferred with it the authorized tools and oiling equipment, boxes and chains with locks for securing tools and oiling equipment, water cooler, etc.

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Applications for Employment.

CULEBRA, C. Z., August 21, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

It is requested that when applications are received from persons in the United States, for employment in this service, same be forwarded to this office, informally, for informal transmission to the Washington Office of the Commission, where such action as is necessary may be taken thereon.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Accommodations on the "Panama."

CULEBRA, C. Z., August 21, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

A few scattered berths remain open on the steamship *Panama* sailing September 3. It is not desired, however, that any further requests for transportation for families be submitted for this sailing.

By direction of the Chairman.

C. A. McILVAINE, Chief Clerk.

CANAL DIRECTORY.

ISTHMIAN CANAL COMMISSION.

Col. Geo. W. Goethals, U. S. A., Chairman, Culebra.
 Col. H. F. Hodges, U. S. A., Culebra.
 Lieut.-Col. D. D. Gaillard, U. S. A., Empire.
 Lieut.-Col. Wm. L. Sibert, U. S. A., Gatun.
 Civil Engineer H. H. Rousseau, U. S. N., Culebra.
 Col. W. C. Gorgas, U. S. A., Ancon.
 Mr. Maurice H. Thatcher, Ancon.
 Mr. Joseph Bucklin Bishop, Secretary, Ancon.

DEPARTMENTS.

Construction and Engineering.

Headquarters, Culebra.
 Col. Geo. W. Goethals, Chairman and Chief Engineer.
 William Howard May, Secretary to the Chairman.
 C. A. McIlvaine, Chief Clerk.
 W. P. Copeland, Assistant Chief Clerk.
 Ad. Faure, Chief Accountant.
 H. S. Parish, Surveying Officer.
 Lieut. Geo. R. Goethals, U. S. A., Assistant Engineer, Fortifications.
 Col. H. F. Hodges, Assistant Chief Engineer.
 C. O. Carlson, Secretary.
 Edward Schildhauer, Electrical and Mechanical Engineer.
 Henry Goldmark, L. D. Cornish, T. B. Mön-
 niche, Designing Engineers.
 Walter F. Beyer, Assistant Engineer.

Civil Engineer H. H. Rousseau, Assistant to the Chief Engineer.

J. J. Campbell, Secretary.
 Maj. T. C. Dickson, U. S. A., Inspector of Shops.
 A. B. Nichols, Office Engineer.
 Civil Engineer F. H. Cooke, U. S. N., Designing Engineer.
 C. I. Finley, Assistant Engineer.
 F. D. Willson, Supervisor.
 James G. Craig, Traveling Engineer.

Central Division.

Headquarters, Empire.
 Lieut.-Col. D. D. Gaillard, Division Engineer.

W. I. Beam, Chief Clerk.
 A. E. Bronk, General Inspector.
 A. S. Zinn, Resident Engineer.
 Mark W. Tenny, Assistant Engineer.
 J. M. Hagan, Superintendent Construction.
 Joseph Little, Superintendent Construction.
 W. T. Reynolds, Superintendent Construction.
 A. Sessions, Superintendent Transportation.
 Dan E. Wright, Superintendent, Municipal Work and Pipe Lines.
 Rance Ferguson, General Foreman, Relocation Dumps.

Atlantic Division.

Headquarters, Gatun.
 Lieut.-Col. Wm. L. Sibert, Division Engineer.

Maj. Chester Harding, U. S. A., Assistant Division Engineer.
 Ben Jenkins, Chief Clerk.
 Maj. J. P. Jervy, U. S. A., Resident Engineer.
 Capt. W. H. Rose, U. S. A., Electrical Superintendent.
 Maj. G. M. Hoffman, U. S. A., Resident Engineer.
 Geo. M. Wells, Office Engineer.

Pacific Division.

Headquarters, Corozal.
 S. B. Williamson, Division Engineer.
 John M. G. Watt, Assistant Division Engineer.
 J. C. Keller, Chief Clerk.
 W. G. Comber, Resident Engineer.
 H. O. Cole, Resident Engineer.
 Walter J. Spalding, Assistant Engineer.
 H. D. Hinman, Assistant Engineer.
 W. L. Thompson, Assistant Engineer.
 James Macfarlane, Supt. of Dredging.

Mechanical Division.

Headquarters, Gorgona.
 A. L. Robinson, Superintendent.
 William Taylor, Chief Clerk.
 Henry Schoellhorn, Mechanical Engineer.
 W. H. Bates, Superintendent, Steamshovel Repairs.
 Hartley Rowe, Electrical Superintendent.

Subsistence.

Headquarters, Cristobal.
 Lieut.-Col. Eugene T. Wilson, U. S. A., Subsistence Officer.

Capt. Frank O. Whitlock, U. S. A., Assistant Subsistence Officer.
 John Burke, Manager, Commissary Department.
 W. F. Shipley, Chief Clerk.

Quartermaster's.

Headquarters, Culebra.
 Col. C. A. Devol, U. S. A., Chief Quartermaster.
 Capt. R. E. Wood, U. S. A., Assistant Chief Quartermaster.
 Lieut. Walter D. Smith, U. S. A., Constructing Quartermaster.
 C. H. Mann, Chief Clerk.
 Capt. C. Nixon, U. S. A., Depot Quartermaster, Mount Hope.
 C. L. Parker, Assistant Depot Quartermaster, Mount Hope.
 V. C. Dillon, Acting Storekeeper, Gatun.
 R. K. Morris, Storekeeper, Gorgona.
 D. H. Beaman, Storekeeper, Empire.
 C. A. Gilmartin, Storekeeper, Miraflores.
 X. D. Holt, Storekeeper, Balboa.

District Quartermasters.

B. C. Poole, Ancon and Balboa.
 J. H. K. Humphreys, Corozal and Miraflores.
 J. T. Smith, Pedro Miguel and Paraiso.
 H. F. Sedwick, Culebra.
 W. G. Ross, Empire.
 Harry Dundas, Las Cascadas and Bas Obispo.
 R. C. Shady, Gorgona.
 R. M. Gamble, Gatun.
 Roy R. Watson, Cristobal, and Toro Point.
 Chas. D. Morgan, Porto Bello.

Civil Administration.

Headquarters, Ancon.
 Maurice H. Thatcher, Head of the Department.

G. A. Ninas, Chief Clerk.
 C. L. Luedtke, Assistant Chief Clerk.
 Tom M. Cooke, Chief, Division of Posts, Customs, and Revenues, Ancon.
 Arthur McGowan, Deputy Collector, Ancon.
 Jno. L. Storia, Deputy Collector, Cristobal.
 Capt. Chas. W. Barber, U. S. A., Chief of Police, Ancon.

Assistant Chief of Police, Ancon.
 C. E. Weidman, Fire Chief, Cristobal.
 Chas. F. Koerner, Assistant Fire Chief, Ancon.
 M. E. Gilmore, Supt. Public Works, Ancon.
 J. J. Reidy, Assistant Superintendent, Public Works, Colon.
 F. A. Gause, Superintendent of Schools, Ancon.
 Edgar P. Beck, Treasurer of Canal Zone, Empire.
 W. G. Comber, Chairman; James Macfarlane, C. J. Anderson, Board of Local Inspectors.

Canal Zone Judiciary.

Headquarters, Ancon.
 Supreme Court—H. A. Gudger, Chief Justice.
 Walter Emery, Clerk, Ancon.
 Thomas E. Brown, Jr., Associate Justice.
 William H. Jackson, Associate Justice.
 Circuit Court, First Circuit—H. A. Gudger, Judge.
 Walter Emery, Clerk, Ancon.
 Circuit Court, Second Circuit—William H. Jackson, Judge.
 Elbert M. Goolsby, Clerk, Empire.
 Circuit Court, Third Circuit—Thomas E. Brown, Jr., Judge.
 Nelson R. Johnson, Clerk, Cristobal.
 M. C. Rerdell, District Judge, Cristobal.
 S. E. Blackburn, District Judge, Ancon.
 Edgar S. Garrison, District Judge, Empire.
 J. B. March, District Judge, Gorgona.

Law.

Headquarters, Ancon.
 Frank Fenille, Counsel and Chief Attorney.
 William K. Jackson, Prosecuting Attorney.
 Charles R. Williams, Assistant Prosecuting Attorney.
 A. A. Greenman, Land Agent.

Sanitation.

Headquarters, Ancon.
 Col. W. C. Gorgas, Chief Sanitary Officer.
 Col. John L. Phillips, U. S. A., Assistant Chief Sanitary Officer.
 Maj. Robert E. Noble, General Inspector.
 Harry E. Bovay, Chief Clerk.

Lieut.-Col. Charles F. Mason, U. S. A., Superintendent Ancon Hospital, Ancon.
 Surgeon Wm. H. Bell, U. S. N., Superintendent Colon Hospital, Cristobal.
 Surgeon J. C. Perry, F. H. and M. H. S., Chief Quarantine Officer, and Health Officer, Panama.
 Surgeon Claude C. Pierce, F. H. and M. H. S., Quarantine Officer, Colon.
 Dr. Fleetwood Gruver, F. H. and M. H. S., Quarantine Officer, Panama.
 Joseph A. LePrince, Chief Sanitary Inspector, Ancon.
 Dr. M. E. Connor, Health Officer, Colon.

Disbursements.

Headquarters, Empire.
 Edward J. Williams, Disbursing Officer.

Wm. M. Wood, Assistant Disbursing Officer.
 C. E. Gilmore, Cashier.
 L. A. Townsend, Acting Paymaster, Ancon.
 J. C. Earle, Acting Paymaster, Cristobal.

Examination of Accounts.

Headquarters, Empire.
 H. A. A. Smith, Examiner of Accounts.
 T. L. Clear, Assistant Examiner of Accounts.

Purchasing Department.

Headquarters, Washington, D. C.
 Maj. F. C. Boggs, U. S. A., General Purchasing Officer.
 C. E. Dole, Chief Clerk.
 Capt. Courtland Nixon, Purchasing Agent on the Isthmus.
 Maj. Wendell L. Simpson, U. S. A., Assistant Purchasing Officer, 24 State Street, New York City.
 Maj. F. H. Lawton, U. S. A., Assistant Purchasing Agent, 614 Whitney-Central Building, New Orleans, La.

Panama Railroad Company.

Headquarters, Colon.
 (General offices, 24 State Street, New York.)
 J. A. Smith, General Superintendent, Colon.
 R. L. McKee, Chief Clerk.
 Lieut. Frederick Mears, U. S. A., Chief Engineer.
 A. K. Stone, Master of Transportation.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Allianca	P. R. R.	Tuesday	Aug. 27
Colon	P. R. R.	Tuesday	Sept. 3
Advance	P. R. R.	Monday	Sept. 9
Panama	P. R. R.	Saturday	Sept. 14
Allianca	P. R. R.	Friday	Sept. 20

CRISTOBAL TO NEW YORK.

Panama	P. R. R.	Tuesday	Sept. 3
Allianca	P. R. R.	Sunday	Sept. 8
Colon	P. R. R.	Sunday	Sept. 15
Advance	P. R. R.	Saturday	Sept. 21
Panama	P. R. R.	Friday	Sept. 27
Allianca	P. R. R.	Thursday	Oct. 3

NEW YORK TO COLON.

Zacapa	U. F. C.	Wednesday	Aug. 21
Prinz Joachim	H. A.	Saturday	Aug. 24
Thames	R. M.	Saturday	Aug. 31
Almirante	U. F. C.	Wednesday	Aug. 28
Carrillo	U. F. C.	Saturday	Aug. 31
Prinz Eitel Friedrich	H. A.	Saturday	Aug. 31
Santa Marta	U. F. C.	Wednesday	Sept. 4
Prinz August Wilhelm	H. A.	Saturday	Sept. 7
Turrialba	U. F. C.	Saturday	Sept. 7
Metapan	U. F. C.	Wednesday	Sept. 11
Trent	R. M.	Saturday	Sept. 14
Tivives	U. F. C.	Saturday	Sept. 14

COLON TO NEW YORK.

Prinz Sigismund	H. A.	Monday	Sept. 2
Trent	R. M.	Tuesday	Sept. 3
Tivives	U. F. C.	Tuesday	Sept. 3
Zacapa	U. F. C.	Thursday	Sept. 5
Prinz Joachim	H. A.	Monday	Sept. 9
Sixola	U. F. C.	Tuesday	Sept. 10
Almirante	U. F. C.	Thursday	Sept. 12
Prinz Eitel Friedrich	H. A.	Monday	Sept. 16

NEW ORLEANS TO COLON.

Heredia	U. F. C.	Wednesday	Aug. 21
Atenas	U. F. C.	Saturday	Aug. 24
Parismina	U. F. C.	Saturday	Aug. 31
Orleanian	U. F. C.	Wednesday	Sept. 4
Abangarez	U. F. C.	Saturday	Sept. 7

COLON TO NEW ORLEANS.

Abangarez	U. F. C.	Thursday	Aug. 29
Atenas	U. F. C.	Thursday	Sept. 5
Parismina	U. F. C.	Thursday	Sept. 12
Orleanian	U. F. C.	Thursday	Sept. 12

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

The following vessels arrived at, or departed from, the port of Balboa during the week ending August 24:
 Arrivals—August 18, *Chile*, from Guayaquil; August 19, *Guatemala*, from Callao; August 20, *Quito*, from Guayaquil; August 19, *Tricolor*, from San Francisco; August 21, *Urubamba*, from Callao; August 22, *Peru*, from San Francisco; August 23, *Aztec*, from San Francisco.

Departures—August 20, *Ucayali*, to Callao; August 20, *Huasco*, to Valparaiso; August 23, *Barracouta*, to Central America; August 23, *Chile*, to Guayaquil.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, SEPTEMBER 4, 1912.

No. 2.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Erection of Emergency Dams.

Arrival of recent shipments has placed on the Isthmus all of the material for the emergency dam for the east chamber of Gatun Locks, with the exception of the gates, which are not essential to the progress of erection at present; and most of that for the west chamber dam. Erection is confined at present, however, to the east dam. All of the steel work on the quadrant over which the short arm of the bridge will travel is in place on its concrete base. The large center casting on which the bridge will pivot is in position; the center track, 30 feet 4 inches in diameter, surrounding the casting, has undergone final adjustment; and all of the heavy center girders, which are to turn on discs about the center casting, are erected in place. The force of the American Bridge Company, in charge of erection, was increased on August 9, by eight bridgemen, and on September 3, by four bridgemen, from the United States.

New Cement Bids.

Bids were opened at the office of the General Purchasing Officer in Washington on September 3 for furnishing an additional million barrels of Portland cement for use on the Canal and auxiliary works, under Circular 721. The specifications provided that this amount may be increased or decreased between 30 and 15 per cent at the option of the Canal Commission. The rate of delivery under the proposed new contract will probably vary from a minimum of 2,000 barrels to a maximum of 5,000 barrels a day from the date deliveries begin until July 1, 1913, and from that date until the completion of the contract, the deliveries will probably range between 500 and 3,000 barrels a day. Deliveries will be expected to be begun not earlier than November 1, 1912, and not later than January 1, 1913, and may extend over a period of two years. In making a contract, the Canal Commission will reserve the right to select the bid, or combination of bids, that

will, in its judgment, be most advantageous to the United States.

The original contract for furnishing cement for use on the Canal work was awarded to the Atlas Portland Cement Company in January, 1909, and called for the delivery of 4,500,000 barrels at the minimum rate of delivery of 2,000 barrels, and the maximum rate of 10,000 barrels a day, with the right to increase the order 15 per cent. Up to August 1, over 4,000,000 barrels had been received on the Isthmus, and there still remained to be shipped approximately 500,000 barrels. The prices under the existing contract were \$1.19 per barrel in wood, and 92 cents per barrel in bags, calculating bags to the barrel, this price being contingent on the return to the manufacturer of eight good empty sacks to the barrel, as each bag is shipped in a double container. On this contract the Atlantic Division received 1,343,757 barrels in wood, but since May, 1911, they have received all cement in bags, as did the Pacific Division from the beginning of shipments.

Recreation Hall at Toro Point.

In response to a petition of the majority of the employes of the Isthmian Canal Commission at Toro Point, a building is being constructed near the site of the bandstand to afford a place of assembly and recreation. It will be of one story, 25 by 40 feet in plan, and open on all sides. To the height of three feet above the floor, the sides will be sheathed with corrugated iron, above which copper screening will reach to the roof. Wide eaves will protect against blowing rains.

Improving the Sabanas Road.

The work of resurfacing that part of the Sabanas road lying within the limits of the Canal Zone has been completed for a distance of about two miles, beginning at the Zone line, just beyond the Sabanas police station. Since the original work was authorized, it has been decided also to resurface and otherwise improve the Tumba Muerta road, one and one-half miles long, which branches off and gives accessibility to a number of farmhouses situated to the north of the Sabanas highway.

The work of improvement consists in covering the road with a layer of No. 2 crushed rock to a depth of four inches, dressing it with a coat of screenings, and then rolling. The work was begun at the eastern boundary of the Zone, in order not to subject the completed section to the wear of the heavy wagons transporting crushed rock and other supplies. When the rolling is finished, the road will be treated with several kinds of road oil to determine the grade best adapted for use on the roads of the Canal Zone. One hundred and twenty barrels of oil for this purpose were received during the month of June, about 40 barrels each of Texaco, Tarvea, and the product manufactured by the West India Oil

Company. It is purposed to divide the road into sections, each section to be treated with a different kind of oil. In addition, a further test will be made of the crude oil manufactured by the Union Oil Company of California, which was applied to several Canal Zone roads during the past dry season. The Sabanas road is much used by automobiles, and on this account, the macadam has been subjected to greater wear. It is believed that the use of oil will not only serve as a dust preventive, but will effectively bind the macadam as well.

New Quarantine Launch.

A new launch has been received and placed in commission for use of the quarantine service at Colon and Cristobal. It is modeled after the pilot boat in the service of the Panama Railroad Company, and was built by the same firm, C. L. Seabury and Company, Morris Heights, N. Y. It has a top length, overall, of 35 feet six inches, with an 8-foot beam, outside measurement. Its engine is a No. 153, Model C. A., and is capable of developing from 32 to 40 horsepower. The deck is provided with a hand rail of brass pipe 1½ inches in diameter, three feet three inches high, which begins at a point nine feet from the tip of the bow, and extends back to the after end of the engine, covering a distance of 10 feet six inches. The cover of the engine compartment is in two leaves. The hull is coppered up to four inches above the water line, and has a keel one foot deep and four inches wide. The boat is equipped with a heavy rope fender all around, and carries the required life-saving apparatus. The launch, formerly used by the Colon and Cristobal quarantine authorities, while entirely serviceable, was too small, and has been transferred to Gatun Lake for the use of the sanitary inspector of that district. The name of the new launch is *Pysche Rittenhouse*.

Lower Approach Wall for Miraflores Locks.

Concrete is being placed for the lower approach wall for Miraflores Locks, extending into the Pacific entrance channel. In structure, it will be two walls, back to back, with an interval of eight feet between bases, and with faces in continuation of the center wall. The outer ends will be joined by a concrete wall, eight feet thick, perpendicular to the parallel walls, and the space thus enclosed will be filled with rock and screenings, after which decking will be laid over the top. Like the other approach walls for the three locks, the wall will be 1,200 feet long and 58 feet wide. It will contain 82,000 cubic yards of concrete.

The structure is to be similar to that of the lower approach wall for Pedro Miguel Lock, except that the bases of the parallel walls will not touch and that each of the two parallel walls of the structure is to rest on rock at elevation 45 feet below mean sealevel, with a toe along the outer side about 10 feet wide

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
	Concrete placed.	Hours worked.	No. of mixers	2-cubic yard mixers.			½-cubic yard mixers.				
				Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>	<i>Cu. Yds.</i>
August 26.	860	31.92	7	936	13.00	2	572	52.00	7	.....	2,368
August 27.	848	31.67	7	1,196	16.93	2	574	44.50	7	.....	2,618
August 28.	582	20.33	7	1,302	18.50	2	400	39.00	6	.....	2,284
August 29.	670	26.75	7	1,096	15.58	2	351	35.00	4	.....	2,117
August 30.	1,184	38.33	7	1,316	18.67	2	331	37.00	5	.....	2,831
August 31.	1,072	30.59	7	1,256	19.91	2	310	30.00	5	.....	2,638
Total... Previously reported.	5,216	179.59	7	7,102	102.59	2	2,538	237.50	5.67	.....	14,856
										.....	3,693
Grand total										.....	1,174,691
										.....	3,693
										.....	1,189,547

OBISPO DIVERSION.

Work Done Since Construction to Prevent Its Breaking Into the Canal.

The Obispo Diversion, which takes care of the water from the drainage area on the east bank of the Canal, between Gold Hill and Gamboa, has given trouble at four different points along its route of five or six miles during the past year, and the work of relocating the channel to remove it from the danger zone is at present in progress at three of these places.

During the French canal times, and up to 1909, the Obispo River flowed into the Cut, thence found its way to the Chagres River. As the excavation in the Canal, through this section, proceeded, it became evident that this flow would have to be diverted, and on June 1, 1909, an artificial channel was completed. It begins near the foot of Gold Hill, and practically parallels the Canal to a point opposite Haut Obispo, where the hills were so close to the Cut that the diversion was turned into a ravine which ends in the Chagres River about one-fourth of a mile above Gamboa. The drainage area of the diversion is about 10 square miles, the greatest flood recorded in the Obispo River during French times being on June 23, 1881—6,014 cubic feet per second. The gaging was taken just below the La Pita River, so that it included the flow of the Camacho, which does not run into the diversion at present. It has been estimated that this discharge of 6,014 cubic feet per second would be about 4,200 cubic feet under present conditions. The diversion was constructed to carry 6,000 cubic feet per second at its outlet, with a depth of 13 feet, and a velocity of over seven feet per second. Its bed, for 14,500 feet, has a fall of 5.28 feet to the mile, and for 9,000 feet, 13.2 feet to the mile. The bottom width of the channel averages about 50 feet. The original excavation aggregated 1,108,662 cubic yards, but additional excavation from time to time since, on account of changing the channel, has brought the total excavation to July 1, 1912, to 1,238,389 cubic yards. The first cost was about \$1,000,000.

Although located well back from the east bank of the Canal, as it existed in 1908 and 1909, the frequent slips and slides have brought the diversion, in several places, in close proximity to it, with the result that two extensive breaks have occurred, and several other points have been threatened. The diversion was located and mostly excavated between Gold Hill and La Pita before the width of the Canal was changed from 200 feet at the bottom, to 300 feet. Local conditions made it necessary for economy at the time to widen out 75 feet on the east side and 25 feet on the west. Had it not been widened out 75 feet on the east side, most of the slides would not have reached to the original location.

The first break of importance took place on May 7, 1910, at a point a short distance north of Empire, known as La Pita, and allowed the water from the diversion to inundate the Cut to a depth of 55 feet above sealevel. The damage was temporarily repaired by the construction of a wooden flume, which was substituted subsequently for one of concrete.

In March of this year, a crack appeared on the west side of the diversion, south of the Empire suspension bridge, near Station 1725, which indicated a movement in the bank in-

volving between 400,000 and 500,000 cubic yards of material, and threatened the diversion back from the bank of the Canal for a distance of about 600 feet. During the following month, the diversion was relocated 550 feet, at its most distant point, farther to the east, by making a detour 1,970 feet long, which caused the excavation of 26,128 cubic yards. The Empire-Paraiso wagon road, and the railroad, were shifted at the same time to the west bank of the new channel.

A few months ago, the slide between Station 1618 and Station 1637 on the east bank of the Canal, opposite Whitehouse, threatened to break back into the diversion, and it was decided to relocate the latter about 100 feet more to the east. This work, which was completed during the months of July and August of this year, required the construction of about 500 feet of trestle, and the excavation of 13,000 cubic yards of material.

A steamshovel is now engaged in making a detour in the diversion, about one-fifth of a mile in length, at a point crossed by the Las Cascadas plantation road, just north of the Empire suspension bridge. The new channel involves the changing of the wagon road, which formerly was at right angles with the bank of the Canal, and then ran parallel to it to the bridge. The new route will be in a direct line to the bridge from where the detour work is in progress.

The break in the diversion, north of Empire, on August 20, which flooded the Cut and involved a slide of considerable proportions, is being repaired as rapidly as possible, and it is expected that the stream will be flowing in its new channel on Thursday, September 5. The heavy showers over the drainage area of the diversion last week carried the water into the Cut, north of the temporary dike at the foot of the break, faster than the pumps at Gamboa could lift it into the Chagres, with the result that the bottom of the Canal was flooded to the depth of two or three feet all the way from the slide to the Gamboa dike. The water was again under control on Saturday, August 31.

Reorganization of Canal Zone Police.

Effective September 1, the organization of the Division of Police and Prisons has been changed to conform with a redistricting of the Canal Zone territory, made on account of the depopulation of part of the Gatun Lake area and the extension of Canal and fortification operations at different points. The Gorgona police district is abolished, the greater part of its territory being merged into the Empire district, while the Bohio subdistrict is absorbed in the Gatun subdistrict, a part of Cristobal district. The present districts are those of Ancon, Empire, and Cristobal.

The boundaries of the Ancon district are coincident with those of the present administrative district of Ancon. The subdistrict of Miraflores is abolished, being consolidated with that of Pedro Miguel. A new subdistrict is designated to include Naos, Flamenco, Culebra, and Perico Islands, which have been policed for some time without distinct district designation. Ancon district is now divided into the subdistricts of Naos Island, Balboa, Las Sabanas, Corozal, and Pedro Miguel.

The boundaries of the Empire police district are coincident with the present boundaries of the administrative districts of Empire and

Gorgona, the district court at Gorgona being continued for the present. The subdistricts of San Pablo and Tabernilla are abolished, and their depopulated territory is merged with that of the new subdistrict of Gorgona. The subdistricts of Empire district are designated as Paraiso, Culebra, Las Cascadas, Bas Obispo, and Gorgona.

The Cristobal police district is the same in territory as the present Cristobal administrative district. Its subdistricts are Gatun, Toro Point, and Porto Bello. The subdistrict of Toro Point includes all of the Canal Zone territory lying west of Limon Bay.

The police stations at Ancon, Empire, and Cristobal are designated as the central stations of their respective districts, other stations being designated as substations and call stations. Substations of Ancon station are Naos Island, Las Sabanas, Corozal, and Pedro Miguel; call stations are Balboa, and Miraflores.

Empire central station has substations at Paraiso, Culebra, Las Cascadas, Bas Obispo, Matachin, and Gorgona. Its call stations are at Cucaracha, Golden Green, Gamboa, and Frijoles.

The substations of Cristobal central station are Gatun, Mount Hope, Toro Point, and Porto Bello, and call stations are located at Monte Lirio, and Colon Hospital.

The reorganization has enabled the division to dispense with the services of one lieutenant and five corporals, though the number of first-class privates was increased by five at the same time. The number of lieutenants is now three; sergeants, eight; corporals, 15; first-class privates, 122; second-class privates, 90.

PERSONAL.

Mr. Emory R. Johnson, professor of transportation and commerce of the University of Pennsylvania, arrived at Colon on Thursday, August 29. This is his third visit to the Isthmus, having been here as a member of the Isthmian Canal Commission of 1899-1904, and again last year. He is the special commissioner of the United States Government on Panama Canal traffic and tolls, and prepared a preliminary statement on the subject, by direction of the Secretary of War, in the early part of this year.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, and engineers; and for chauffeurs, will be held by the Board of Local Inspectors, at the Administration Building, Ancon, on Wednesday, September 11, 1912, at 8 a. m. All applicants for licenses as chauffeurs must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8 a. m., with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their ability to properly operate an automobile, and must have the automobile with them.

Missing Man.

Any one having information regarding the whereabouts of Pinkney Albert Davies, who was at one time in the employ of the Isthmian Canal Commission, is requested to communicate with THE CANAL RECORD.

WEST BREAKWATER LIGHT.

Harbor Light and Fog Signal Station, Part of Plan for Lighting the Canal.

In the general scheme for lighting the Canal a harbor light and fog signal station is to be built at the outer end of the west breakwater in Colon Harbor. An "L," turning inward, will

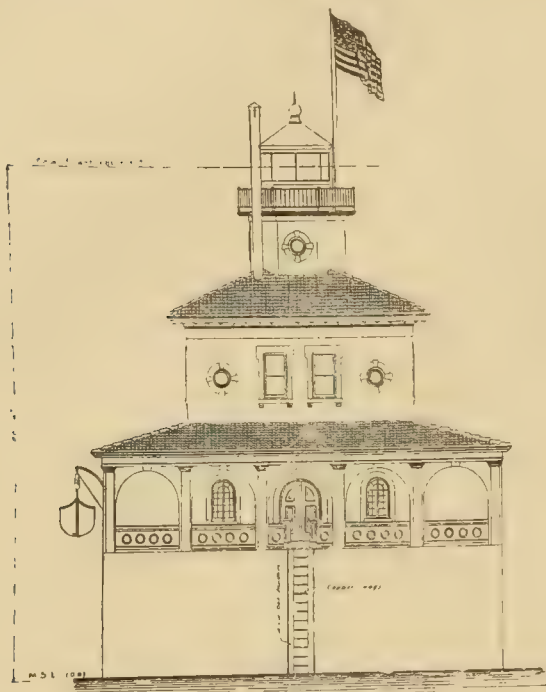


FIG. 1—SOUTHEAST ELEVATION OF STATION.

be made at the end of the breakwater and the tower built in it, so that thorough protection from the waves will be obtained.

The natural bottom of the harbor at this

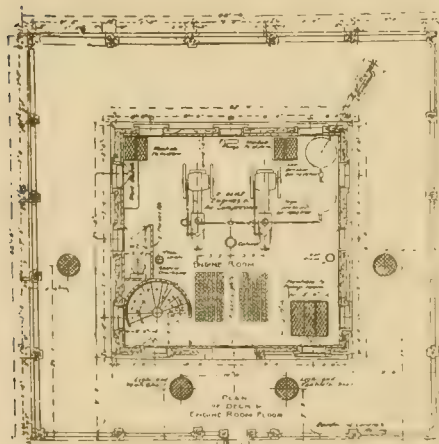


FIG. 2—PLAN OF PUMP ROOM AND CISTERNS.

point is about 45 feet below mean tide, and is made mostly of silt brought down by the streams entering Limon Bay. On this silt a pile of riprap for the subfoundations will be dumped, allowed to settle for some time, and leveled off by a diver at elevation 22 feet below sealevel.

Already a reinforced concrete caisson has been built up to a height of 15 feet at the Mount Hope drydock, floated out to the powder dock at Mindi, and there built up to a height of 25 feet. It is now sunk in 20 feet of

water in an isolated part of Limon Bay, where it will remain until time to place it on the riprap foundation, when it will be towed out and sunk to its position by letting water into the 16 pockets through valves made for that purpose. The caisson will then be built to a height of 36 feet, the outside pockets filled with rock, decked over with a reinforced concrete floor, and the superstructure built on that.

The caisson is 46 by 46 feet in plan by 36 feet high, and is divided into 16 pockets by three transverse walls running each way. The bottom is 18 inches thick; the outer walls are 14 inches thick, and the interior walls 12 inches. All are reinforced with 1-inch twisted steel rods, and the water pressure against the outside walls is taken care of by differential spacing of the reinforcement. Each exterior pocket has a 5-inch pipe, with a globe valve, which connects it with the outside, and will permit the caisson to be sunk on an even keel in a few minutes. The four interior pockets are connected in a similar way to the exterior pockets. After the caisson is in place the valves will be recovered. The four interior pockets will be utilized from 24 feet up by making cisterns in two of them, and using the other two for a gasoline engine and pump room. Intake and waste pipes are placed as shown in Figure 3.

The superstructure will be of reinforced

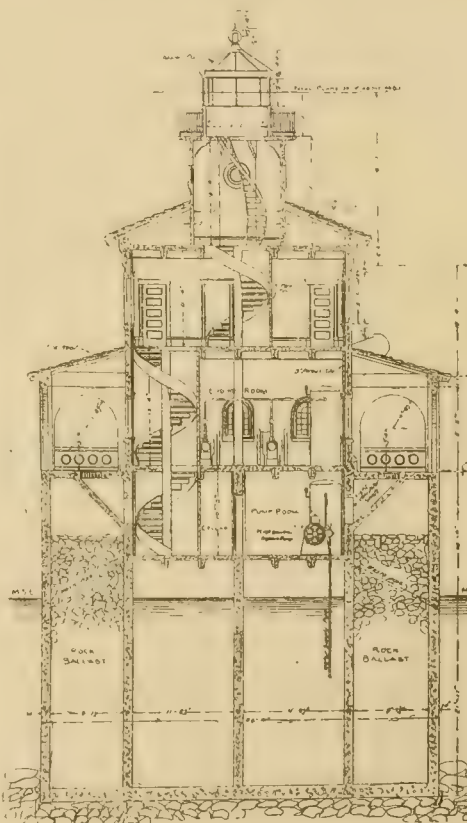


FIG. 3—VERTICAL SECTION OF STATION.

concrete, except the roof, which will be of tile,

and the floor beams, which will be I-beams encased in concrete.

The first floor contains the gasoline engine, air compressors, air tanks, shower bath, etc., the second floor, a kitchen, pantry, living room, dry room, closets, etc., for the attendants, while the third will be the watch room, and the fourth floor, the lantern.

The superstructure will be 26 by 26 feet in plan, and the focal plane is 56 feet four inches above mean sealevel.

When completed, this station will have a light of the fourth order, a compressed air fog signal, and a submarine bell.

Annual Inventories.

The annual inventories, taken as of June 30, 1912, show a reduction in stock in the various material storehouses of the Quartermaster's Department of \$790,568.50, as compared with the same date a year ago. The total value of material carried in stock in the storehouses at the end of the past fiscal year was \$3,721,212.90. Every storehouse showed a decrease, with the exception of Ancon and Toro Point. The general storehouse at Mount Hope, and the two largest storehouses next in order, Gorgona and Empire, showed decreases of \$138,958.44, \$196,323.63, and \$162,984.87, respectively. The material returned to stock by other divisions during the fiscal year ending June 30, aggregated \$862,400.78.

Red Cross Finances.

The financial statement of the Canal Zone chapter, American National Red Cross, for the month of July, 1912, is, as follows:

RECEIPTS.

July 1. On hand.....	\$2,300.36
July 25. Membership dues.....	3.00

Total receipts..... \$2,303.36

DISBURSEMENTS.

July 1. Relief of patient at Colon Hospital, deported to Jamaica.....	\$10.00
July 2. Relief of American ex-employee, sent to the United States on account of being totally blind.....	150.00
July 17. Relief of destitute colored woman at Culebra.....	10.00
July 26. Relief of patient at Colon Hospital, deported on account of tuberculosis.....	10.00
July 26. Relief of Spaniard at Culebra, deported to Spain on account of tuberculosis.....	50.00
July 29. Relief of man and wife from Empire, deported to England.....	15.00

Total disbursements..... \$245.00

July 31. Balance on hand..... \$2,058.36

JOHN L. PHILLIPS, Treasurer.

Approved:

C. A. DEVOL, Chairman.

Canal Zone Postal Savings Bank Transactions.

A statement of Canal Zone postal savings bank transactions at Canal Zone post-offices, for the period of July 1 to July 29, follows:

NAME OF OFFICE.	Postal Savings Certificates Issued.	Postal Savings Certificates Paid.
Ancon.....	\$9,340.00	\$4,458.00
Balboa.....	9,378.00	6,149.00
Bas Obispo.....	960.00	1,261.00
Corozal.....	10,747.00	9,986.00
Cristobal.....	9,951.00	6,858.00
Culebra.....	9,758.00	6,818.00
Empire.....	6,080.00	4,325.00
Gatun.....	14,897.00	16,465.00
Gorgona.....	17,514.00	14,172.00
Las Cascadas.....	9,991.00	6,705.00
Matachin.....	581.00	603.00
Miraflores.....	5,464.00	4,302.00
Paraiso.....	4,455.00	2,468.00
Pedro Miguel.....	15,342.00	11,768.00
Cristobal, Sta. A.....	915.00	170.00
Cristobal, Sta. B.....	932.00	427.00
Total.....	\$126,305.00	\$96,935.00

CULEBRA CUT SLIDES.

Excavation on this Account During the Past Fiscal Year Larger Than Ever Before.

There was removed from slides and breaks in the Culebra Cut section of the Central Division during the twelve months ending June 30, 1912, a total of 5,915,000 cubic yards of material, which is the greatest amount taken out on this account in any one year since the beginning of operations. A statement showing the total excavation, the amount removed from slides and breaks, and the percentage involved in the slides and breaks, is given below. There is also presented a graphical illustration showing the total estimated excavation on account of slides, as compared with the original total of excavation in the Canal prism in the Culebra Cut section; also, the estimate of total excavation remaining on July 1, 1912, showing the amount of excavation remaining on that date due to slides:



This circle represents the total amount of material excavated from the Canal prism in the Culebra Cut section by the Americans, exclusive of slides, to July 1, 1912.



This circle represents the total amount of material excavated from slides from the Culebra Cut section by the Americans up to July 1, 1912.



The circle on the left represents the material remaining to be excavated from the Canal prism in the Culebra Cut section, exclusive of all slides, from July 1, 1912.

The circle on the right represents the material in slides on the banks of the Canal in the Culebra Cut section, remaining to be excavated according to estimate made as of July 1, 1912.

FISCAL YEARS.	Total excavation.	Removed from slides.	Percent of total amount removed from slides.
	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>	
1904-1909....	40,983,366	3,227,059	7.87
1910.....	17,865,808	2,649,563	14.83
1911.....	18,552,644	4,879,378	26.30
1912.....	17,143,067	5,915,000	34.50
Total.....	94,544,885	16,671,000	17.63

The first large slide to occur in the banks

of the Canal in the Culebra Cut section was that at Cucaracha, known as the Cucaracha slide, which developed in July, 1905, and from which nearly 3,000,000 cubic yards of material have been excavated to date. During the twelvemonth period ending June 30, 1912, only 170,000 cubic yards of material were removed from this slide, which, at present, gives no evidence of any future considerable movement. It covers an area of 47.1 acres.

The most extensive slide, or rather break, is that on the west bank of the Canal at Culebra, which extends practically continuously from Station 1726 to Station 1804, covers an area of 63 acres, and has now broken back to a point where the site of the Culebra clubhouse is involved. From this area, a total of 6,765,500 cubic yards of material had been removed up to June 30, 1912, and it is estimated that 1,300,000 cubic yards remained to be excavated on that date. A total of 2,710,000 cubic yards was taken out from the area involved in this slide during the twelvemonth ending June 30, 1912. It first developed in January, 1907.

The slide next largest in extent is situated on the east bank of Culebra Cut directly opposite the one on the west bank, is practically continuous from Station 1741 to Station 1796, and covers an area of 50.7 acres. A total of 4,290,000 cubic yards of material had been removed from this slide up to June 30, 1912, and approximately 600,000 cubic yards remained to be removed on that date. It first developed in January, 1907.

The three slides above described are the only ones which have so far developed in which the total amount of material involved exceeded 1,000,000 cubic yards. A statement showing the slides in the Central Division, which had developed up to June 30, 1912, all of which are confined to the Culebra Cut section, follows:

LOCATION.	Date of development.	Removed year ending July 1, 1912.	Material excavated to date.	Material remaining.	Area of slide in acres.
		<i>Cubic Yards.</i>	<i>Cubic Yards.</i>	<i>Cubic Yards.</i>	
East side, opposite Bas Obispo.....	Sept. 1910	6,000	117,000	70,000	2.80
East side, opposite Haut Obispo.....	Sept. 1908		18,000		0.60
West side, opposite Buenavista.....	Nov. 1908	119,000	162,000		3.30
East side, opposite Las Cascadas.....	Feb. 1908	2,000	503,000		11.50
East side, opposite Las Cascadas.....	Sept. 1909	80,000	102,000	20,000	1.40
East side, opposite Whitehouse.....	Oct. 1908		286,000		4.60
West side, Whitehouse yard.....	June, 1912			130,000	1.00
East side, opposite Whitehouse.....	Oct. 1909	195,000	413,000	180,000	5.80
East side, Upper La Pita.....	Dec. 1909		20,000		1.70
East side, Lower La Pita.....	May, 1910		30,000	50,000	0.30
West side, Cunette.....	Sept. 1910	4,000	67,000	10,000	0.90
West side, Empire.....	May, 1910	165,000	210,000	50,000	2.20
West side, Culebra.....	Oct. 1907	2,710,000	6,765,000	1,300,000	63.00
East side, Culebra.....	Jan. 1907	1,960,000	4,290,000	600,000	50.70
Cucaracha.....	July, 1905	170,000	2,890,000	230,000	47.10
West side, Contractor's Hill.....	1908	5,000	216,000	15,000	2.00
East side, Cucaracha village.....	Sept. 1911	57,000	57,000	160,000	3.40
East side, Paraiso.....	Mar. 1907	62,000	385,000	10,000	5.70
Small slides.....		380,000	140,000	770,000	
Total.....		5,915,000	16,671,000	3,595,000	208.00

Since June 30, 1912, two or three other slides have developed, the most important being the break in the east bank of the Cut about one-half mile north of Empire, which occurred on August 20, and allowed the water in the Obispo Diversion to flow into the Cut, and another break in the west bank at Culebra.

The work of decreasing the pressure where breaks and slides might be expected, by excavation with steamshovels, has continued uninterruptedly since January, 1911. Three shovels have been kept continuously at work terracing the west bank at Culebra, and the same number were occupied during the latter

part of 1911 on the opposite bank. The excavation has been made in each locality in a series of nine terraces. In addition, one shovel has been engaged in similar work at the Whitehouse yard, and another on the east bank, a little south of the Empire suspension bridge. The maximum depth of material removed at one spot in the west bank at Culebra was 80 feet, measured vertically, and on the east bank 70 feet in one place.

The record shows that while the lightening of weight has, on the whole, been beneficial, it has not wholly stopped the moving and heaving. The results obtained so far, however, warrant a continuance of this work, and it will probably be prosecuted until all excavation in the Cut by steamshovels has been completed. Most of the so-called slides during the past year, or more, were, properly speaking, breaks in the banks of the Cut, due to the inability of an underlying layer of rock of poor quality to support the enormous pressure superinduced by the weight above it. This weight crushes the underlying material, forces it laterally, and causes it to heave in the bottom of the Cut. Observations made show that the material at times has heaved to a height of 30 feet, but within the past year, or more, 15 or 20 feet has been about the maximum height. Other observations made of these upheavals go to show that the material involved is not clay or stiff mud, as is commonly supposed, but rather argillaceous sandstone in pieces ranging in volume from a few cubic inches to 20 or 30 cubic yards, with an average perhaps of from one to three cubic yards.

Colon Humane Society.

A special meeting of the Colon Humane Society was held in the Municipal building, Colon, on Wednesday evening, August 29, Dr. Bieberach presiding. Among the cases reported were two of destitute children; the first, Doris Godfrey, a patient in Colon Hospital, who has been deserted by her parents. A

person has been found who wishes to adopt the child provided he can procure legal guarantee that the parents cannot claim it at any future time. As no such provision is made in the laws of the Republic of Panama, the little girl remains at the hospital pending further decision of her case. The second case was that of a child orphaned by the recent death of its parents. The case was referred to the governor of Colon, in order that steps may be taken to have the child placed in the government asylum in Panama. It was reported that the city authorities are taking steps to prevent the employment of children in saloons.

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

Among other questions discussed at the meeting of the Executive Board of the Canal Zone Federation of Women's Clubs, held at Cristobal on Friday, August 30, were the arrangements for the January meeting, at which it is thought the Federation will formally disband, owing to the decrease in membership, due to the completion of Canal construction. In case this action is taken, single clubs in the Canal Zone will be at liberty to join the General Federation. The January meeting will be made one of special interest.

An invitation has been extended to the federation, in connection with the state federations throughout the United States, to send representatives to the XV International Congress of Hygiene and Demography, to be held in Washington, October 23 to 28, and the president was authorized to be its representative at that meeting.

During the absence in September and October of the president and the corresponding secretary, all matters concerning the federation may be referred to the recording secretary, Mrs. Carl H. Elliott, Cristobal.

For the information of those women who have no club affiliation in local organizations, and yet are interested in such activities, the following notice which appeared in THE CANAL RECORD of February 21 is reprinted herewith:

"The board, at its meeting at Gorgona on February 9, authorized a revision of the Federation by-laws in order to admit a class of individual members, or what will be known as general members. This class of members will be composed of women residing in Canal Zone villages where there are no federated clubs. General members will have all the rights and privileges of regular members; they may hold office, vote on all questions and act on any Federation committee. The annual dues for such members will be one dollar, payable at the time of admittance to membership. A membership committee was appointed, composed of the president and the two secretaries. Any woman wishing to become a general member, who is endorsed by clubwomen, should communicate with the corresponding secretary, Mrs. Thomas E. Brown, Jr. of Cristobal." This class of members will act on committees, especially on civic and local concerns, by which means they will become members of the executive board and have voice in all matters which may come before that body. The provision for this general membership was considered advisable by the constant changes in the personnels of the various clubs, and also by the removal of many clubwomen from the Isthmus, which, in several cases caused the disbandment of organizations. In order that the federation work be carried out according to its original plan, it was necessary to maintain its membership, and by this means the board hopes it may be done.

A circular has been issued among the organizations of women in the Canal Zone in the interest of the \$500,000 fund for the "Woman's Titanic Memorial" to be erected in the city of Washington by the women of America, in memory of the men who lost their lives, in the sinking of the *Titanic*, in order that the women and children should have

first place. The object of sending this communication to the president, or secretary, of each organization was to bring the matter before the women in the Canal Zone. It is not to be regarded as an appeal to any organization, but it was thought by the local committee that a larger number of Canal Zone women might be reached by this means than if a general announcement was made. The plan is that each woman subscribe one dollar to the fund. A committee has been formed, composed of women of St. Luke's Altar Guild, for the purpose of centralizing the local effort.

The rector of Christ Church, Colon, assisted by the members of the Woman's Altar Guild, entertained the members of the Gatun mission guild at the rectory on Saturday afternoon, August 24.

Church Work.

The annual report of the Panama mission of the Episcopal church of America has just been compiled, and a summary of the status of the work at the end of the fiscal year, July 1, is, as follows: The staff of clergy in the mission comprises four white priests, including the general missionary, and two West Indians, one of these having been advanced to the priesthood in January at the time of the annual visitation of the bishop in charge. In addition to these, there is a staff of nine catechists for the West Indian missions at Gorgona, Bas Obispo, Mount Hope, Las Cascadas, Paraiso, Panama, and Darien. The value of church property has been increased by the transfer of the stone structure of Christ Church, on Colon beach, from the Panama Railroad Company to the mission, valued at \$33,000, and the construction of a mission church at Pedro Miguel. The total valuation of church properties is \$69,100. The total offerings for the year from all sources amounted to \$9,293.34. The number of communicants was 1,343. There were 961 baptisms during the year, and 283 candidates were presented to the bishop for confirmation at his visitation. There are four altar guilds, composed of American women; these are in connection with Christ Church, Colon; Gatun mission; St. Mary's, Empire, and St. Luke's Hospital chapel, Ancon. In addition to its responses to the needs of the church, this last named society contributed \$50 toward the building fund of St. Michael's mission at Pedro Miguel, as its Easter offering.

Owing to the progress of the work on the Canal it was found necessary to suspend the work of the church for Americans at Culebra; to abandon the missions at San Pablo and Tabernilla, and to establish the mission before referred to at Pedro Miguel. The mission authorities are looking toward the abandonment of the missions at Gorgona, Empire, Culebra, Bas Obispo, and Las Cascadas by 1913, and the establishing of a mission in the thickly populated suburbs of Panama. Recommendations for a reorganization, at the visitation of the bishop in 1913, to meet the demands of the permanent Canal force are also contained in the report.

At the meeting of the Woman's Altar Guild of St. Luke's Hospital Chapel, held at the Hotel Tivoli on Tuesday morning, September 3, it was decided to suspend all meetings of the guild until November 1, All Saints' Day, at which time the annual meeting of the guild will be held, with election of officers. The day will begin with the corporate communion of

the guild, in the chapel, the time of which service will be announced later, and the annual meeting, followed by a social session, will be at the home of Mrs. R. E. Noble. This will complete the fifth year of the organization. The membership is sustained and interest in the various activities of the guild has been uniformly keen. During the recess, altar duty will be taken by the members, as requested by the chairman of the altar committee.

Sunday and Labor Day Excursions.

A large number of Canal employes took advantage of the two holidays, Sunday, September 1, and Labor Day following, for various outings and excursions. A party of 50 left on Saturday evening on the steamer *Veraguas* for a trip to the Pearl Islands. It stopped at San Miguel on Rey Island and returned to Panama on Monday afternoon. Two other parties made a trip to these islands. A second party, composed of Commission employes, including a number of the staff of Ancon Hospital, left on Saturday evening for a trip to the Bayano River. During the stay on the river, the members of the party spent the time in alligator shooting and orchid hunting. The trip included a walk from Capitan to Chepo, the return to Panama being made on Monday evening. A party of 16 spent Sunday on Taboguilla beach, leaving Panama by the launch *Aurora* at 9.30 a. m., on Sunday, and returning the evening of the same day. The time was spent in fishing, orchid hunting, and bathing. Lunch was taken in an abandoned palm-thatched native hut. There were also several excursions to Taboga.

United Spanish War Veterans.

A meeting of Chagres Camp, No. 1, U.S.W.V., will be held in the Kangaroo hall, Empire, at 3 p. m., Sunday, September 8, 1912. This meeting is for the purpose of installing a full staff of officers for the new camp. After the meeting, an entertainment, with refreshments, will follow. All members of the camp are requested to be present. The Panama Auxiliary, No. 1, and all eligibles; and ladies, are invited to attend.

Civil Service Examinations.

Examinations for the following named positions are scheduled to be held at Culebra on October 20: Agricultural inspector, Philippine Service; assistant observer, nonapportioned Departmental Service; cadet engineer, cadet officer, Lighthouse Service; mechanical draftsman, topographic draftsman, Isthmian Canal Service; engineer, Indian Service (steam engineering, electrical engineering, heating, refrigeration, gas and gasoline engines, hydraulics;) farmer, Indian Service; fish culturist, nonapportioned Departmental Service; junior engineer (civil,) junior (mechanical or electrical,) engineer, department at large; pharmacist, Public Health and Marine Hospital Service; printer, Government Printing Office; scientific assistant, Department of Agriculture, nonapportioned Departmental Service; trained nurse, Indian and Isthmian Canal Services; wireman, nonapportioned Departmental Service.

Women will be admitted to the examinations for scientific assistant and trained nurse mentioned above.

Applications for the above named examinations will not be received in this office after September 26. This date will be changed if necessary. In requesting information the

kind of examination desired should be specifically mentioned. A limited supply of a special announcement on the scientific assistant examination has been received.

All instructions found in application forms and in the Manual of Examinations concerning an examination desired should be carefully read and understood before filing application. In answering question 4 in applications, residence must be shown in a State, and county thereof, of the United States, *up to the time of making application*. The date of examination should be omitted in application forms.

ISTHMIAN CIVIL SERVICE BOARD.
Culebra, C. Z., August 31, 1912.

Obituary.

Alfred Smith, an employe of the Central Division at Empire, died in Ancon hospital on August 30. He was 47 years of age, married, and had been on the Isthmus six years. He is survived by his wife, living at Empire.

Miss Margaret E. Gannon, a nurse in Colon hospital, died in the hospital on August 22. She was 29 years of age, and had been on the Isthmus four and one-half years. She is survived by a brother, George Gannon, living in Philadelphia, Pa.

Mrs. George M. Kane, the mother-in-law of Edward G. Bath of Gatun, died in Colon Hospital on August 28. She was 63 years of age and had been on the Isthmus six months, coming here from Ohio.

Knights of Pythias Memorial Exhibit.

The Canal Zone Knights of Pythias have been invited to participate in a Pythian bazaar and states exhibit to be held in Baltimore, in October, the proceeds of which will be devoted toward a fund for the erection of a Pythian memorial castle. The Canal Zone exhibit will consist of objects representative of the Isthmian life of the American people. The Young Men's Christian Association, the Society of the Chagres, the Boy Scouts, and other local organizations have been asked to participate in the Canal Zone exhibit. The local committee is formed of the following members of the Knights of Pythias: W. S. Lawrence, C. R. Chisholm, Cristobal; J. H. Stevenson, C. O. Jones, Gatun; C. S. Boyer, K. R. S., Gorgona, F. G. Calvert, K. R. S., Las Cascadas; S. A. Benninger, R. E. Murphy, Empire; Geo. A. Jones, K. R. S., Culebra; T. L. Kent, J. W. Pickett, Paraiso; R. H. Hall, Balboa. The Baltimore exhibit will be opened on October 1, probably by President Taft.

Misdirected Letters.

ANCON, C. Z., September 4, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Arnold, Mrs. John	Langston, Argle
Barker, Arthur J.	Lyons, S. J.
Bennett, C. S.	Marshall, Louise E.
Carvallis, Carlos	Matsumoto, M.
Catleyne, Thomas A.	Mitchel, McD.
Cot, John	Phillips, Betsy (pkg.)
Dye, Ira W.	Roldanz, Antonio R.
Edwards, Lenard	Rose, Chas. D.
Hallet, Charles	Saldien, Aug.
Hughes, R.	Senior, Miss Beatrice
Keeler, Mrs. Marey L.	Von Pflugk, Mrs. Lucy
Kitchen, F. L.	Williams, J. E.
Lang, Edward R.	Williams, S. G.

Band Concert.

A concert will be given by the Isthmian Canal Commission band at Corozal, C. Z., on Sunday, September 8, at 4.30 p. m.

The next concert will be given at Empire on Sunday, September 15.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

COROZAL.

Corozal bowlers met defeat at the hands of Gorgona, Saturday night, August 31. The scores were, as follows:

Gorgona.	Corozal.
Sims..... 136 161 185	Sims..... 156 144 158
Everett..... 148 181 173	Dalton..... 146 138 165
Gebert..... 120	Snyder..... 158 147 134
King..... 181 181 149	Bordt..... 145 164 159
Davis..... 149 202 170	Coonly..... 147 184 158
Johnston..... 150 136	

Total.... 734 875 813 752 727 774

CULEBRA.

The following departments of the clubhouse will remain and the activities carried on as usual: Barber-shop, bowling alleys, pressing club, reading room, library, cigar stand, and soda fountain.

Following is the standing of the bigpin bowling teams:

Team.	Won.	Lost.	P. C.
Spreaders.....	7	3	.700
Unloaders.....	7	3	.700
Wreckers.....	6	3	.667
Track shifters.....	4	6	.400
Piledrivers.....	3	6	.333
Exploders.....	2	8	.200

EMPIRE.

After being closed for one month for repairs, the bowling alleys were opened on Wednesday, September 4. On Saturday night, September 7, the Gatun and Culebra teams will bowl two of the Empire teams on the Empire alleys.

The winners of the local basketball league will play the "All-Star" team on Friday, September 6.

New classes in Spanish will be formed the first of September. The classes meet on Tuesday and Thursday evenings.

GORGONA.

George R. D. Kramer, formerly secretary of the Culebra clubhouse, has been appointed secretary at Gorgona to fill the position made vacant by the resignation of Thomas Booz. He will take charge shortly.

The bowling alleys are undergoing repairs.

GATUN.

"Open house" was observed on Saturday evening, August 31. The affair was held on the first floor. A large number of the latest phonograph records were played for the first time. The euchre pool tournament created interest and resulted, as follows: Miller, 123 balls; Cheeks, 114; Chenault, 99; Eggleston, 66; Huttlemaler, 66; Dennis, 63; Twitchell, 60; Sherrard, 54. Mr. Miller will receive a cue for winning first prize in the tournament. For the four-cornered billiard tournament, Townsley received the cue for first prize; Wurster was awarded second, Eggleston, third; Miller, fourth. Immediately after the pool tournament, those present congregated in the lobby, where the following men were presented with gold medals as members of the winning team of the recent Isthmian pool tournament: W. C. Dalton, D. C. Galloway, G. L. Hughes, Louis DePoorter. Mr. C. E. Vierbuchen was presented with a medal as first prize in the July duckpin tournament. On behalf of the council and members of the clubhouse, P. Wilbert Brunner, who, for the past seven weeks, has been volunteer acting physical director, was presented by Secretary Smith, with a gold ring with pearl setting, and a pair of gold cuff buttons, as a token of appreciation for the services he has rendered the association, and of the members' personal esteem. A reception was then held in honor of Mr. P. T. Woolworth, formerly of Rochester, N. Y., who has been appointed physical director of the Gatun clubhouse. During the evening, Mr. H. S. Glick entertained the visitors with piano selections. Refreshments were served.

A three-cushioned billiard tournament will be started this week. Any member is entitled to enter. Hand your name to Louis DePoorter.

Gatun's membership of 416 is the largest of any clubhouse on the Isthmus. The membership receipts for August were over \$450.

Five new billiard cloths were received from the United States during the past week, and the tables will be recovered immediately. New balls have been ordered also.

Six new tenpin balls have been ordered from the United States.

The physical department is being reorganized this week under the management of the new physical director, Mr. Woolworth. The gymnasium nights this week will be Tuesday and Thursday, and the basketball practice will be held on Wednesday and Friday nights.

The boys' department will be reorganized also. Regular systematic gymnasium work, with games, etc will be held Monday, Wednesday, and Saturday mornings at 9 o'clock. Mr. Woolworth will have charge.

CRISTOBAL.

A pennant was awarded to A. M. Gibson for the highest tenpin score during August. Score, 255. Mrs.

Raymond Bell was awarded a pennant for the highest score in duckpins made by the ladies during the month. Score, 98. A ragtime tournament will be started next week.

The next moving picture show will be on Friday night, September 6, at 8.15 o'clock.

Beginning with Tuesday night, September 10, regular basketball practice will be resumed, and any who wish to try for the team which will represent the Cristobal clubhouse in the Isthmian League are urged to come out. The league games will begin in October.

Rainfall from August 1 to 31, 1912, Inclusive.

STATIONS.	Maximum one day.	Date.	Total for period.
<i>Pacific Section—</i>			
Ancon.....	1.31	5	Ins.
Balboa.....	1.51	5 & 6	6.79
*Miraflores.....	4.10	28	11.35
Pedro Miguel.....	2.04	19	9.51
Rio Grande.....	2.04	27	13.19
<i>Central Section—</i>			
Culebra.....	2.11	27	12.88
*Camacho.....	2.39	27	13.77
Empire.....	1.34	19	10.53
Gamboa.....	2.98	19	16.64
*Juan Mina.....	2.18	28	11.04
Alhajuela.....	2.55	28	12.87
*El Vigia.....	3.12	28	14.96
*Gorgona.....	4.10	19	14.82
*Frijoles.....	3.60	19	13.63
*Trinidad.....	1.55	26	7.68
*Monte Lirio.....	2.19	19	8.15
<i>Atlantic Section—</i>			
Gatun.....	3.35	3	11.98
*Brazos Brook.....	3.01	19	14.42
Colon.....	2.45	19	9.87
Porto Bello.....	3.80	27	14.15

*Standard rain gage—readings at 5 p. m., daily. Automatic rain gage at unstarred stations—values midnight to midnight.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, August 31, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigia.	Alhajuela	Gamboa.	Gatun Lake.
Sun., August 25.....	127.0	93.4	45.9	35.8
Mon., August 26.....	131.2	96.4	48.4	36.2
Tue., August 27.....	131.5	96.6	48.8	36.8
Wed., August 28.....	130.7	96.1	49.7	37.5
Thurs., August 29.....	129.1	95.0	49.6	38.1
Fri., August 30.....	127.6	93.9	46.4	38.4
Sat., August 31.....	126.9	93.3	45.8	38.7
Height of low water to the nearest foot.....	125.0	91.0	44.0	

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending September 11, 1912. (75th meridian time):

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	P.M.	P.M.	P.M.
September 5...	3.00	9.04	3.45	9.43	.....
September 6...	4.08	10.13	4.55	11.02	.....
September 7...	5.29	11.34	6.08	.....	.....
			A.M.		
September 8...	.....	12.23	6.45	12.52	7.18
September 9...	.....	1.33	7.50	1.58	8.17
September 10...	.....	2.30	8.45	2.54	9.18
September 11...	.....	3.20	9.35	3.43	9.56

Married.

GALLAGHER-SULLIVAN—At St. John's Church, Canton, Mass., on Tuesday, August 20, Catherine E. Sullivan of Canton, Mass., to William P. Gallagher of Milton, Mass., the Rev. John J. Farrell officiating. Canal Zone residence, Culebra.

Auction of Fire Horses at Cristobal.

Three fire horses, which are no longer necessary in the fire department on account of the new automobile fire engines, will be offered for sale to the highest bidder, for cash, at the Cristobal fire station, Saturday afternoon, at 2 p. m., September 7, 1912. The horses are now at the Cristobal fire station and may be inspected by any one interested. The three horses were purchased in the United States at a cost of \$250 each. Their weight is about 1,300 pounds; color, bay; height, about 15½ to 16½ hands. Right is reserved to reject any or all bids.

C. E. WEIDMAN, Fire Chief.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning September 1, 1912:

	Price.
FRESH MEATS.	
Mutton—Stewing, per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire forequarter (not trimmed, 10 pounds and over), per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Leg (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	16
Chops, per pound.....	24
Loin for roasting, per pound.....	24
Cutlets, per pound.....	28
Pork—Loin chops or roast, per pound.....	18
Beef—Suet, per pound.....	2
Soup, per pound.....	5
Stew, per pound.....	8
Plate, per pound.....	9
Corned, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Chuck roast (3 pounds and over), per pound.....	12
Pot roast, per pound.....	15
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds), per pound.....	18
Sirloin roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, chuck, per pound.....	12½
Round, per pound.....	13
Rib, per pound.....	13
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds), per pound.....	20
Tenderloin (Western), per pound.....	25
Venison (Imported), Stew, per pound.....	6
Forequarter (not under 6½ pounds), per pound.....	9
Rack (not under 5½ pounds), per pound.....	20
Saddle (not under 7½ lbs.), per pound.....	20
Leg (not under 9 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
MISCELLANEOUS.	
Pate de Foie Gras, jar.....	55
Livers—Beef, per pound.....	11
Calf, each.....	60
Half, each.....	30
Steak, Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	10
Frankfurter, per pound.....	12
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	19
Sweetbreads—Beef, per pound.....	25
Eggs, fresh, dozen.....	10
one-half dozen only.....	15
Bluefish, per pound.....	12
Halibut, fresh, per pound.....	12
Salmon, fresh, per pound.....	22
Fluke, fresh, per pound.....	10
Shads, fresh, each.....	50
Roes, shad, pair.....	25
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds each.....	1.25
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00
Fowls, each.....	1.00
Ducks, Western, about 4½ pounds, each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	126
Squabs, each.....	35
Capons, each.....	2.10
Ducks, teal, per pair.....	50
Ducks, Blackhead, pair.....	60
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants, per pair.....	1.30
CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound.....	36
Sugar cured, per pound.....	20
Sliced, per pound.....	21
Half, for boiling, per pound.....	22
Boiled, per pound.....	28
Hocks, per pound.....	28
Beef, salt, family, per pound.....	12
Bacon—Breakfast, whole piece, per pound.....	23
sliced, per pound.....	24
Pork, salt, family, per pound.....	14

Ox tongues, each.....	Price. 1.00
Pigs' feet, per pound.....	9
Tongues, per pound.....	18

DAIRY PRODUCTS.

Butter—Creamery, special, per pound.....	38
Sheffield Farms, extra, fancy per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	45
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Parmesan, lb.....	35
Neufchatel, cake.....	6
Gouda, per pound.....	34
Snappy, cake.....	10
Milk (Certified), per bottle.....	**20
Butter, bottle.....	**15
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	25
1-gallon.....	250

VEGETABLES AND FRUITS.

Beets, per pound.....	*4
Celery, per head.....	*8
Cabbage, per pound.....	4
Cucumbers, per pound.....	*4
Carrots, per pound.....	*4
Lettuce, per pound.....	12
Onions, per pound.....	*3½
Potatoes, white, per pound.....	3
sweet, per pound.....	5
Squash, per pound.....	5
Turnips, per pound.....	*3
Tomatoes, per pound.....	7
Yams, per pound.....	3
Apples, per pound.....	10
Cantaloupes, each.....	8
Grapes, Malaga, per pound.....	15
Grapefruit, each.....	4
Lemons, dozen.....	24
Limes, per 100.....	80
Plums, per pound.....	10
Oranges, Jamaica, per dozen.....	12
Pineapples, each.....	12½
Watermelons, each.....	8
Peaches, per pound.....	30
Oranges, California navel, per dozen.....	30

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

††Fowls weigh each about as follows: 3, 3½, 4, 4½ and 5 pounds. Prices are based accordingly; when size ordered is not in stock next lightest weight is supplied and refund note sent for difference.

‡Sold only from commissaries; no orders taken for delivery.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, and Colon, during the week ending August 31:

Tivies, August 25, from New York, with 30 barrels rosin, 16 cases chain blocks, four cases hardware, for stock; 20 cases sheet copper, for fortifications; 57 cases castings, for superintendent of erection.

Oruba, August 25, from New York, with 17 cases babbitt metal, 391 bundles roofing iron, for stock; 210 packages track material, for superintendent of erection.

Mathilda, August 25, from New York, with 205 cases blasting caps, 37 drums gasoline, for stock; 137,685 bags cement, for Atlantic and Pacific Divisions.

Prinz Sigismund, August 27, from New York, with 20 bundles rakes, for stock; 112 bundles anchor bolts, 38 kegs washers and nuts, for fortifications.

Belgian, August 27, from Liverpool, with 100 barrels carbolic acid, for stock.

Zacapa, August 28, from New York, with 60 drums calcium carbide, 50 cases toilet paper, 12 cases stationery, for stock; 62 cases incandescent lamps, for Mechanical Division; 50 cases gate machinery, for superintendent of erection; 13 crates stove pipe, for Pacific Division;

Panama, August 28, from New York, with 312 bundles steel bars, 37 barrels bricks, for Pacific Division; 114 kegs rivets, 27 pieces steel beams, for Panama Railroad Company; 200 pieces car couplers, for Mechanical Division; 86 barrels insulators, 26 cases castings, for superintendent of erection; nine cases paint, 20 cases stationery, 18 reels steel rope, 11 pieces steel channels, 300 kegs white lead, 139 bundles steel bars, 600 cases linseed oil, 67 cases candles, 30 cases sal soda, 1,340 kegs wire nails, 100 drums welding compound, 70 pieces lumber, for stock; and a miscellaneous cargo, the whole consisting of 3,785 packages, weighing 400 tons.

Atenas, August 29, from New Orleans, with 2,868 pieces lumber, for Mechanical Division; 218 pieces piling, 416 pieces lumber, 153 barrels sea coal facing, 70 cases paint, 413 sacks feed, 167 drums kerosene, 400 cases kerosene, for stock.

Ancon, August 30, from New York, with 77 barrels pitch, 650 packages garbage cans, 16 cases handles, 62 kegs nuts, 30 cases stationery, 32 cases hardware, for stock; 30 barrels white cement, for Panama Railroad Company; 199,975 bags cement, for Atlantic and Pacific Divisions.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Colon.....	P. R. R. Tuesday.....	Sept. 3
Advance.....	P. R. R. Monday.....	Sept. 9
Panama.....	P. R. R. Saturday.....	Sept. 14
Allianca.....	P. R. R. Friday.....	Sept. 20

CRISTOBAL TO NEW YORK.

Allianca.....	P. R. R. Sunday.....	Sept. 8
Colon.....	P. R. R. Sunday.....	Sept. 15
Advance.....	P. R. R. Saturday.....	Sept. 21
Panama.....	P. R. R. Friday.....	Sept. 27
Allianca.....	P. R. R. Thursday.....	Oct. 3

NEW YORK TO COLON.

Thames.....	R. M.....	Saturday.....	Aug. 31
Almirante.....	U. F. C.....	Wednesday.....	Aug. 28
Carrillo.....	U. F. C.....	Saturday.....	Aug. 31
Prinz Eitel Friedrich.....	H. A.....	Saturday.....	Aug. 31
Santa Marta.....	U. F. C.....	Wednesday.....	Sept. 4
Prinz August Wilhelm.....	H. A.....	Saturday.....	Sept. 7
Turrialba.....	U. F. C.....	Saturday.....	Sept. 7
Metapan.....	U. F. C.....	Wednesday.....	Sept. 11
Trent.....	R. M.....	Saturday.....	Sept. 14
Tivies.....	U. F. C.....	Saturday.....	Sept. 14
Prinz Sigismund.....	H. A.....	Saturday.....	Sept. 14
Zacapa.....	U. F. C.....	Wednesday.....	Sept. 18
Sixola.....	U. F. C.....	Saturday.....	Sept. 21
Prinz Joachim.....	H. A.....	Saturday.....	Sept. 21
Almirante.....	U. F. C.....	Wednesday.....	Sept. 20
Magdalena.....	R. M.....	Saturday.....	Sept. 28
Prinz Eitel Friedrich.....	H. A.....	Saturday.....	Sept. 28
Carrillo.....	U. F. C.....	Saturday.....	Sept. 28

COLON TO NEW YORK.

Zacapa.....	U. F. C.....	Thursday.....	Sept. 5
Prinz Joachim.....	H. A.....	Monday.....	Sept. 9
Sixola.....	U. F. C.....	Tuesday.....	Sept. 10
Almirante.....	U. F. C.....	Thursday.....	Sept. 12
Prinz Eitel Friedrich.....	H. A.....	Monday.....	Sept. 16
Magdalena.....	R. M.....	Tuesday.....	Sept. 17
Carrillo.....	U. F. C.....	Tuesday.....	Sept. 17
Santa Marta.....	U. F. C.....	Thursday.....	Sept. 19
Prinz August Wilhelm.....	H. A.....	Monday.....	Sept. 23
Turrialba.....	U. F. C.....	Tuesday.....	Sept. 24
Metapan.....	U. F. C.....	Thursday.....	Sept. 16
Prinz Sigismund.....	H. A.....	Monday.....	Sept. 30
Clyde.....	R. M.....	Tuesday.....	Oct. 1
Tivies.....	U. F. C.....	Saturday.....	Oct. 1

NEW ORLEANS TO COLON.

Heredia.....	U. F. C.....	Saturday.....	Aug. 31
Orleanian.....	U. F. C.....	Wednesday.....	Sept. 4
Abangarez.....	U. F. C.....	Saturday.....	Sept. 7
Heredia.....	U. F. C.....	Wednesday.....	Sept. 11
Atenas.....	U. F. C.....	Saturday.....	Sept. 14

COLON TO NEW ORLEANS.

Atenas.....	U. F. C.....	Thursday.....	Sept. 5
Heredia.....	U. F. C.....	Thursday.....	Sept. 12
Cartago.....	U. F. C.....	Thursday.....	Sept. 12
Abangarez.....	U. F. C.....	Thursday.....	Sept. 19
Heredia.....	U. F. C.....	Thursday.....	Sept. 19

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston, at 10 a. m., on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* sail at 2 p. m., and call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans, via Limon, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 2 p. m.

The following vessels arrived at, or departed from, the port of Balboa during the week ending August 31: Arrivals—August 25, *Manavi*, from Buenaventura; August 26, *Huallaga*, from Callao; August 27, *Peru* (P. S. N.), from Guayaquil; August 28, *San José*, from San Francisco; August 29, *City of Para*, from San Francisco; August 29, *Aysen*, from Valparaiso; August 31, *California*, from Corinto.

Departures—August 26, *Guatemala*, to Callao; August 26, *Quito*, to Guayaquil; August 28, *Urubamba*, to Callao; August 29, *Peru*, to San Francisco; August 30, *Manavi*, to Buenaventura; August 31, *Tricolor*, to San Francisco.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, SEPTEMBER 11, 1912.

No. 3.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Canal Record Index.

The index to Volume 5 of THE CANAL RECORD, in form suitable for binding, will be ready for distribution shortly. It will be sent free, on application, to such persons, institutions, libraries, etc., as desire to preserve their copies of THE CANAL RECORD in book form. Application should be made to the Secretary, Isthmian Canal Commission, Ancon, C. Z.

Panama Inaugural Ceremonies.

An invitation has been extended through the Chairman of the Commission to all American citizens on the Isthmus to attend the inauguration of President-elect Belisario Porras on October 1, and a special invitation has been extended to the fraternal and other organizations on the Isthmus to participate actively in the celebration.

The Chairman regrets his inability to declare a holiday on this occasion, but there is no objection to employees being excused for this purpose if their services can be spared on that day by the heads of the respective departments and divisions. Societies or organizations desiring to accept this invitation should communicate with Mr. Samuel Lewis, Panama, Republic of Panama.

Canal Work in August.

The grand total of Canal excavation to September 1 was 178,344,405 cubic yards, leaving to be excavated 33,882,595 cubic yards, or a little over one-fifth of the entire amount necessary for the completed Canal. The total excavation for the month of August was 2,443,353 cubic yards, as compared with 2,706,223 cubic yards in August, 1911.

The dry excavation amounted to 1,356,625 cubic yards, and was principally by steam-shovels. The dredges removed 955,617 cubic yards from the Canal prism, and 131,111 cubic yards from the site of the Balboa terminals, in addition to the amount pumped into Gatun Dam by suction dredges. The progress on

the locks at Gatun, Pedro Miguel and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 515,947 cubic yards. Of this total, 1,974 cubic yards, consisted of dry excavation near the Locks, and the remainder was wet excavation—429,415 cubic yards from the Atlantic entrance, and 84,558 cubic yards between the Locks and the sea.

The total excavation in the Central Division was 1,094,132 cubic yards, 1,067,300 cubic yards from the Culebra Cut section, and 26,832 cubic yards from the Obispo Division.

In the Pacific Division, the total excavation was 833,274 cubic yards, 260,519 cubic yards of which, consisted of dry excavation, 183,570 cubic yards from the Canal prism, 64,963 cubic yards from the terminal site, and the remainder near the locks. Of the 572,755 cubic yards of wet excavation, 441,644 cubic yards were from the channel, while the remainder was in connection with the terminal work.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—			
Locks, dam and spillway	Cu. Yds. 1,974	Cu. Yds.	Cu. Yds. 1,974
Mindi .....	.....	.....	.....
Total	1,974	.....	1,974
Wet excavation—			
Atlantic entrance.....	429,415	.....	429,415
Locks, dam and spillway	84,558	.....	84,558
East Diversion .....	.....	.....	.....
Total	513,973	.....	513,973
Total wet and dry excavation	515,947	.....	515,947

CENTRAL DIVISION.

Dry excavation—		
Culebra Cut.....	1,067,300	1,067,300
Chagres section.....	.....	.....
Obispo Diversion	26,832	26,832
Total	1,094,132	1,094,132

PACIFIC DIVISION.

Dry excavation—		
Locks, dams and spillways	11,986	11,986
Balboa terminals	64,963	64,963
Prism, south of Miraflores Locks.....	183,570	183,570
Total	260,519	260,519
Wet excavation—		
Pacific entrance.....	441,644	441,644
Balboa terminals.....	131,111	131,111
Total	572,755	572,755
Total wet and dry excavation	833,274	833,274

TOTAL CANAL EXCAVATION.

Dry excavation	1,356,625	1,356,625
Wet excavation.....	1,086,728	1,086,728
Total	2,443,353	2,443,353
Mean rainfall along Canal (ten stations), 11.98 inches.		
By "Work" excavation is meant excavation actually		

made for one of the constituent parts of the Canal, such as a prism, diversions, or locks, etc., that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc.. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

DAM AND LOCK CONSTRUCTION.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	Cu. Yds.	Cu. Yds.
Concrete laid in locks.	6,855	81,801	88,656
Concrete laid in dams and spillways.....	1,223	.....	1,223
Fill placed in dams....	244,618	57,621	302,239

Culebra Clubhouse to be Dismantled.

The Culebra clubhouse will be demolished, because of the decision to remove the ground upon which it stands, in order to lighten the weight upon the west bank of the Canal at this point. All Y. M. C. A. activities will be discontinued, but arrangements are being made to use the upper floor of the schoolhouse for white children at Culebra for moving picture shows and other entertainments. The present equipment will be stored at the Lirio planing mill.

Automobiles in the Canal Zone.

On September 1, 1912, there were 65 automobiles licensed to travel in the Canal Zone. Of these, 14 are the property of residents of the Canal Zone, and the remainder of citizens of the Republic of Panama. With one exception, all are passenger vehicles, the exception being a motor wagon in use at Mount Hope and Cristobal. The first Canal Zone automobile license was issued on December 3, 1910. Six licenses were issued in 1910; 28 during 1911, and 48 to date in 1912, making a total of 82 licenses granted, seventeen of which have lapsed. The number of motor cycles licensed on September 1, 1912, was 31, of which 28 are the property of residents in the Canal Zone.

Water Capacity of Gatun Lake.

The surface of Gatun Lake was 39.06 feet above sealevel at 5 p. m., on September 2, and calculations based on contour surveys indicate that the amount of water in the lake was then 34.29 billion cubic feet. At 5 p. m., on September 9, the surface of the lake was 42 feet above sealevel, and the quantity of water had increased by 5.74 billion cubic feet, or to 40.03 billion cubic feet, which is 299,424,400,000 gallons. The maximum capacity of the Rio Grande reservoir, when the surface of its water is even with the dam, at elevation plus 238 feet, is 65,588,000 cubic feet, less than one-seventh of the average daily flow into Gatun Lake. The Rio Grande has approximately twice the capacity of the Camacho, and six and a half times the capacity

STEAMSHOVEL RECORDS.

Work of Central Division Machines During the Month of August.

During the month of August, the total amount of material excavated in the Central Division was 1,094,132 cubic yards, of which 197,597 cubic yards were classified as earth, and 896,535 cubic yards as rock.

The entire total of 1,094,132 cubic yards was removed by steamshovels.

The high record for the month was made by shovel No. 217, working 27 days in the Culebra district, which excavated 49,157 cubic yards of rock.

The second best record for the month was made by shovel No. 212, working 27 days in the Culebra district, which excavated 44,713 cubic yards of rock.

The best record for a shovel of the 70-ton class was made by shovel No. 109, working 27 days in the Culebra district, which excavated 41,793 cubic yards of earth.

Shovel No. 229, working in the Culebra district, made a high record for one day by excavating 3,021 cubic yards of rock on August 1.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best records for the month, and for one day, are shown in the following table:

BEST RECORDS FOR THE MONTH.
CULEBRA DISTRICT.

SHOVEL No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
217.....	.....	49,157	49,157	27
212.....	.....	44,713	44,713	27
109.....	41,790	.....	41,790	26

EMPIRE DISTRICT.

101.....	33,808	33,808	27
211.....	31,488	31,488	24
216.....	30,312	30,312	25

PEDRO MIGUEL.

231.....	33,374	33,374	26
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BEST RECORDS FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
232	Empire.....	Aug. 14	Rock.....	2,308
124	Empire.....	Aug. 30	Earth.....	2,223
210	Empire.....	Aug. 12	Rock.....	2,002
229	Culebra.....	Aug. 17	Rock.....	3,021
212	Culebra.....	Aug. 16	Rock.....	2,942
256	Culebra.....	Aug. 30	Rock.....	2,649
207	Culebra.....	Aug. 21	Rock.....	2,622
231	Pedro Miguel	Aug. 20	Rock.....	2,337

Civil Service Examinations.

Examinations for the following named positions are scheduled to be held at Culebra, probably on October 20: Agricultural inspector, Philippine Service; assistant observer, non-apportioned Departmental Service; cadet engineer, cadet officer, Lighthouse Service; mechanical draftsman, topographic draftsman, Isthmian Canal Service; engineer, Indian Service (optional—steam engineering, electrical engineering, heating, refrigeration, gas and gasoline engines, hydraulics); farmer, Indian Service; fish culturist, nonapportioned Departmental Service; junior engineer (civil), junior engineer (mechanical or electrical) Engineer department at large; pharmacist, Public Health and Marine Hospital Service; printer, Government Printing Office; scientific assistant, Department of Agriculture, nonapportioned Departmental Service; trained nurse, Indian and Isthmian Canal Services; wireman, nonapportioned Departmental Service.

Women will be admitted to the examina-

tions for scientific assistant and trained nurse mentioned above.

Applications for the above named examinations will not be received in this office after September 26. This date will be changed if necessary. In requesting information the kind of examination desired should be specifically mentioned. A limited supply of a special announcement on the scientific assistant examination has been received.

All instructions found in application forms and in the Manual of Examinations concerning an examination desired should be carefully read and understood before filing application. In answering question 4 in application, residence must be shown in a State, and country therein, of the United States, *up to the time of making application*. The date of examination should be omitted in application forms.

ISTHMIAN CIVIL SERVICE BOARD.
Culebra, C. Z., August 31, 1912.

PERSONAL.

Mr. H. H. Rousseau, accompanied by his family, and Mrs. George R. Goethals, sailed for New York on the *Panama*, on Tuesday, September 3, on his annual leave.

Lieut.-Col. C. A. Devol sailed on the *Allianca* on September 8, on his annual leave.

The Hon. H. Percival Dodge, the American minister, accompanied by Mrs. Dodge, sailed for New York on the United Fruit Company's steamer *Zacapa*, on Thursday, September 5, on his annual leave.

Mr. Frank Feuille sailed on September 5 on the *Atenas*, to New Orleans, to spend his annual leave in the United States.

Col. Tom M. Cooke sailed for the United States on the *Panama* on Tuesday, September 3, on 84 days' leave of absence, 42 days of which are without pay.

Mr. J. A. Smith and Mr. Frank A. Gause were among the passengers on the *Allianca*, who returned from leave on Monday, September 2.

Mr. James C. Courts, clerk of the House Committee on Appropriations, is a passenger on the *Cristobal* scheduled to arrive at Cristobal on Thursday, September 12.

I. B. of S. S. and D. M.

Local No. 19, I. B. of S. S. and D. M., will hold its regular meeting on Sunday, September 15, at the Empire lodge hall, at 12.15 p. m. All members are requested to attend.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending September 7:

DATE.	Hours worked.	Cubic Yards.
September 2. (Holiday).....	.....	.....
September 3.....	6.50	2,403
September 4.....	7.25	2,589
September 5.....	8.05	2,627
September 6.....	8.05	2,801
September 7.....	7.55	2,713
Total.....	38.20	13,133

Building Notes.

Additional quarters are to be provided at Corozal by the removal of two Type 14-two-family houses from Culebra for the use of gold married employees, and the conversion of two laborers barracks, in the rear of the Corozal hotel, into quarters for American bachelor employees. Each of these barracks

will contain eight rooms, four on each side of a hallway that will extend through the center of each building. In addition, there will be a Type 18 house near the hotel, which is to be brought from Bas Obispo. This building will provide a total of 24 rooms for gold bachelor employees.

Plans have been made for the erection of an office building, 14 by 30 feet in size, near the Spillway site at Gatun, for the use of the supervisors of erection of the lock gates. It will contain two principal rooms, one for a general, and the other, for a private office.

Labor Trains to East Balboa.

An extension of labor train service between Balboa and East Balboa has been put into effect to accommodate employees in the former village, which is now without a hotel, and the crews of dredges which change shifts at 6 a. m., and 6 p. m. During the lunch hours, a train of two cars operates between the repair shop at Balboa and the foot of Ancon crusher, which is within a few hundred yards of the East Balboa hotel. The Panama-Balboa labor train schedule has been amended, as follows: The trains which leave Panama at 5.25 a. m., and 5.35 p. m., run direct to the East Balboa commissary store, then return to Big Tree, and arrive at Balboa 20 minutes after leaving Panama; and the trains which leave Balboa at 6 a. m., and 6.10 p. m., follow the same route in reverse. With the exception of these four trains the Panama-Balboa schedule remains the same.

Pacific Division Sand Service.

A report of sand cars loaded and shipped from Balboa during the month of August, follows:

DESTINATION.	Number Cars.	Cubic Yards.
Pacific Division.....	2,493	44,924
Atlantic Division.....	5	121
Central Division.....	24	360
Mechanical Division.....	4	68
Quartermaster's Department.....	4	100
Civil Administration.....	1	25
Fortifications.....	*101	2,823
First Division.....	28	428
Lighthouse Division.....	1	23
Panama Railroad Company.....	2	50
Concrete dock, P. R. R.....	3	61
Balboa terminal.....	3	45
Total.....	*2,669	49,028

*In addition, one barge load was shipped.

Central Division Unloaders for August.

The following statement shows the number of trains and Lidgerwood cars unloaded by the Central Division during the month of August:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa.....	4	1,331	26,620
Miraflores*.....	3	592	11,840
Gamboa.....	3	580	12,130
Total.....	10	2,503	50,590

*Two unloaders, working from August 1 to 20, unloaded 357 trains, consisting of 7,140 cars; three unloaders, working from August 21 to 31, unloaded 235 trains, consisting of 4,700 cars, making a grand total of 592 trains, consisting of 11,840 cars.

Missing Man.

Information is desired as to the whereabouts of Mr. Frank H. Weakley, formerly of Nashville, Tenn. He was known to be at Las Vegas, Nevada, in February, 1910, but no trace of him has been discovered since. Any person having knowledge of him is requested to send it to THE CANAL RECORD.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

Mths.	CULEBRA SECTION.*				CHACRES SECTION.**			
	1906.	1907.	1908.	1909.	1908.	1909.	1910.	1911.
Jan....	70,650	120,990	566,750	1,227,022	1,150,249	1,323,693	1,356,394	1,416,035
Feb....	75,200	168,410	639,112	1,248,265	1,194,454	1,259,173	1,409,338	1,349,569
March...	132,840	239,175	815,270	1,290,885	1,434,567	1,509,728	1,728,748	1,539,618
April....	126,749	213,757	879,527	1,242,574	1,272,746	1,288,945	1,414,336	1,455,216
May....	75,935	196,209	690,365	960,540	1,126,963	1,099,279	1,299,100	1,235,902
June....	76,905	212,623	634,586	1,134,032	1,242,154	1,305,141	1,401,016	1,345,760
July....	78,570	187,759	770,570	1,121,325	1,200,828	1,155,810	1,332,533	1,315,560
Aug....	49,210	244,823	766,806	1,171,927	1,173,370	1,339,948	1,442,402	1,094,132
Sept....	44,085	291,452	753,468	1,122,860	1,235,978	1,336,978	1,400,173	1,304,173
Oct....	52,940	327,009	834,439	1,160,101	1,302,901	1,209,554	1,306,971	1,209,498
Nov....	61,540	221,642	790,632	1,022,576	1,070,752	1,209,554	1,306,971	1,209,498
Dec....	70,630	307,649	1,025,485	1,210,046	1,152,022	1,211,400	1,351,082	1,351,082
Totals	914,254	2,702,991	9,177,130	13,912,453	14,557,034	15,398,599	16,596,891	10,944,700

ATLANTIC DIVISION.†

Mos.	GATUN LOCKS, DAM AND SPILLWAY.††				PEDRO MIGUEL LOCKS.†				MIRAFLORES LOCKS, DAMS AND SPILLWAY.††			
	1906.	1909.	1910.	1911.	1908.	1909.	1910.	1911.	1908.	1909.	1910.	1912.
Jan....	292,155	120,690	125,011	65,859	1,330	58,242	27,320	15,690	7,203	61,202	31,479	48,744
Feb....	282,797	95,031	123,738	50,511	1,278	58,242	27,320	15,690	39,046	55,689	15,300	12,936
Mar....	374,595	70,051	102,007	51,431	254	95,624	6,784	674	73,194	18,184	72,739	28,352
Apr....	373,456	70,009	103,243	51,431	254	95,624	6,784	674	73,194	18,184	72,739	28,352
May....	266,747	52,756	82,958	40,888	1,974	24,280	10,405	5,905	60,660	12,148	79,751	29,094
June....	213,359	39,058	95,503	6,897	1,974	24,280	10,405	5,905	60,660	12,148	79,751	29,094
July....	158,262	40,346	99,737	22,558	1,974	24,280	10,405	5,905	60,660	12,148	79,751	29,094
Aug....	145,960	49,945	103,040	3,459	1,974	24,280	10,405	5,905	60,660	12,148	79,751	29,094
Sept....	154,064	57,321	115,327	112	1,974	24,280	10,405	5,905	60,660	12,148	79,751	29,094
Oct....	118,275	66,590	72,030	.....	1,974	24,280	10,405	5,905	60,660	12,148	79,751	29,094
Nov....	119,904	96,592	.....	.....	1,974	24,280	10,405	5,905	60,660	12,148	79,751	29,094
Dec....	2,274,561	793,835	1,238,234	235,952	75,805	256,780	739,355	128,412	82,399	511,933	194,639	878,577
Totals	2,274,561	793,835	1,238,234	235,952	75,805	256,780	739,355	128,412	82,399	511,933	194,639	878,577

*Total to Sept. 1, 1912, 84,447,524 cubic yards. Excavated in 1904, May to December, 243,472 cubic yards.
†Total to Sept. 1, 1912, 12,384,655 cu. yds., of which 1,027,769 cu. yds. were removed in 1907, 185,239 cu. yds. were removed by sluicing.
††Excavation at Miraflores Locks began in July, 1907. There were excavated 178,835 cubic yards in 1907, 590,555 cubic yards in 1908, 713,015 cubic yards in 1909, 662,995 cubic yards in 1910, 36,382 cubic yards in 1911, 36,382 cubic yards in 1912, total to Sept. 1, 2,496,198 cubic yards.
†††There were also 8,233 cubic yards excavated at Gatun Locks and Dams in 1907. There were removed 1,638,371 cubic yards at different points in prism from Sept. 1, 1912, to Sept. 1, 1912. There were also 172 cubic yards removed by steamshovels outside of prism during October, 1906, and 1,340,179 cubic yards in 1907, 9,485,194 cubic yards; in this total are included 26,638 cubic yards excavated October to December, 1906, and 1,340,179 cubic yards in 1907.
††††Total to Sept. 1, 1912, 2,665,204 cubic yards. ††Total to Sept. 1, 1912, 155,173 cubic yards.

WET EXCAVATION

Mos.	ATLANTIC DIVISION.†				PACIFIC DIVISION.††			
	1907.	1908.	1909.	1910.	1907.	1908.	1909.	1910.
Jan....	111,100	490,701	521,050	510,055	520,181	94,710	460,250	469,529
Feb....	110,002	472,722	444,910	493,448	455,318	93,480	663,519	671,477
March...	84,145	546,886	461,208	412,828	391,736	116,820	783,281	865,696
April....	69,889	496,356	470,635	190,574	492,579	104,855	676,539	731,767
May....	133,847	564,386	315,370	447,578	514,178	112,340	122,157	720,753
June....	124,116	572,729	182,575	458,021	452,098	132,575	656,620	844,685
July....	109,922	625,497	348,451	424,092	425,195	98,400	108,338	733,181
Aug....	194,397	638,217	422,846	508,825	429,415	114,300	168,294	737,774
Sept....	403,842	624,776	410,574	451,871	420,434	105,780	153,975	750,080
Oct....	415,120	505,260	314,778	549,788	470,400	97,170	357,122	762,276
Nov....	422,797	570,832	457,889	600,708	742,242	92,988	365,423	698,089
Dec....	442,835	679,604	489,121	483,370	535,409	90,528	349,551	729,960
Totals	2,621,914	6,742,996	4,839,407	5,528,661	5,785,226	2,837,504	4,851,531	1,911,233

†Dredges removed 38,425 cubic yards at Gatun Dam site in 1907, and 1,526,179 cubic yards at Gatun Locks in 1908, 1909, and 1912, of which 84,558 were removed in Aug. 1912.
††Excavated at Miraflores Locks 309,647 cubic yards in 1909; 156,123 cubic yards in 1910; 176,578 cubic yards in 1911; total 642,350 cu. yds.
†††Total to Sept. 1, 1912, 29,783,173 cu. yds.; in this total are included 393,822 cubic yards excavated in 1915, and 1,027,615 cubic yards in 1906.
††††Total to Sept. 1, 1912, 34,403,687 cubic yards. Of this amount, 1,258,304 yards were removed by monitors. *Total to Sept. 1, 1912, 591,336.

CONCRETE IN LOCKS AND DAMS.

MONTHS.	GATUN LOCKS.†				PEDRO MIGUEL LOCKS.††				MIRAFLORES LOCKS.†			
	1910.	1911.	1912.	1913.	1910.	1911.	1912.	1913.	1910.	1911.	1912.	1913.
Jan....	54,136	72,919	34,983	16,273	38,513	15,003	.....	.....	24,011	.....	.....	48,416
Feb....	55,696	72,103	26,664	13,218	37,011	12,639	.....	.....	146	.....	.....	63,931
March...	60,998	86,884	27,532	18,793	44,716	9,351	.....	.....	314	.....	.....	83,706
April....	63,227	67,361	11,600	24,522	28,638	9,460	.....	.....	13	.....	.....	97,735
May....	74,273	67,844	7,746	29,576	19,133	10,736	.....	.....	27	.....	.....	36,154
June....	99,401	55,305	6,095	30,651	18,243	10,061	.....	.....	1,603	.....	.....	26,536
July....	84,001	71,046	8,093	41,464	19,406	11,480	.....	.....	3,672	.....	.....	68,938
Aug....	55,686	66,928	6,855	51,264	20,36	6,413	.....	.....	6,030	.....	.....	37,003
Sept....	76,720	57,398	.....	50,702	15,379	.....	.....	.....	1,133	.....	.....	56,083
Oct....	86,949	53,636	.....	61,422	25,637	.....	.....	.....	22,159	.....	.....	60,873
Nov....	75,152	43,407	.....	64,248	19,622	.....	.....	.....	23,871	.....	.....	41,726
Dec....	80,212	43,590	.....	42,854	14,360	.....	.....	.....	21,583	.....	.....	48,772
Total.	856,451	758,821	129,568	444,947	301,893	85,123	97,501	474,832	595,657	.....	.....	.....

Spillway, Gatun Dam, March 17, 1909—September 1, 1912, 205,593 cu. yds.

Miraflores Dam, to September 1, 1912, 471 cubic yards.

Pedro Miguel Dam, 533 cubic yards to September 1, 1912.

116,072 cu. yds in 1909. ††33,856 cu. yds in 1909. †††202 cu. yds in 1909.

FILL PLACED IN DAMS.

Mths.	GATUN.*				PEDRO MIGUEL.†				MIRAFLORES.†			
	1911.	1912.	1913.	1914.	1911.	1912.	1913.	1914.	1911.	1912.	1913.	1914.
Jan....	211,992	218,690	173,900	239,266	35,044	89,243	24,685	.....	24,920	.....	.....	.....
Feb....	301,733	211,008	211,399	145,221	.....	53,131	27,350	.....	26,475	.....	.....	.....
March...	342,809	255,040	242,574	229,659	.....	16,238	25,131	.....	26,292	.....	.....	.....
April....	368,658	205,130	204,184	286,956	.....	14,400	38,353	.....	31,220	.....	.....	.....
May....	419,348	207,751	194,733	227,017	.....	1,78	35,858	.....	37,770	.....	.....	.....
June....	432,008	227,996	160,688	193,110	.....	15,300	54,415	.....	37,820	.....	.....	.....
July....	324,947	201,996	108,463	207,405	.....	14,865	6,150	.....	45,140	.....	.....	.....
Aug....	259,389	232,426	43,589	201,029	.....	24,812	12,481	.....	.....	.....	.....	.....
Sept....	261,838	194,497	.....	41,452	.....	3,400	.....	.....	.....	.....	.....	.....
Oct....	214,320	218,405	.....	.....	.....	3,190	.....	.....	.....	.....	.....	.....
Nov....	266,603	207,157	.....	.....	.....	7,350	.....	.....	.....	.....	.....	.....
Dec....	89,752	233,063	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.	3,493,388	2,613,666	1,379,851	1,729,063	57,469	292,559	366,336	460,514	254,207	.....	.....	.....

*Wet fill to Jan. 1, 1911, 5,833,076 cu. yds. Dry fill to Jan. 1, 1911, 6,125,105 cu. yds.

†Dry fill to Jan. 1, 1911, 260,852 cu. yds.

††Wet fill to Jan. 1, 1911, 294,712 cu. yds. Dry fill to Jan. 1, 1911, 609,863 cu. yds.

CANAL EXCAVATION TO DATE.

By French Companies..... 78,146,960
By Americans—
Dry excavation..... 29,908,000
Dredges..... 111,171,016
Total..... 67,173,389
May 4 to December 31, 1904..... 243,472
January 1 to December 31, 1905..... 1,799,227
January 1 to December 31, 1906..... 4,948,497
January 1 to December 31, 1907..... 15,765,290
January 1 to December 31, 1908..... 37,116,735
January 1 to December 31, 1909..... 35,096,166
January 1 to December 31, 1910..... 31,437,677
January 1 to December 31, 1911..... 31,603,899
January 1 to August 31, 1912..... 20,333,442

TOTALS BY DIVISIONS AND AMOUNT TO BE EXCAVATED.

DIVISIONS.	Amount excavated.		Remaining to be excavated.	

Atlantic— Dredges.....	8,681,392	40,029,169	21,592	7,493,831
Culebra Cut.....	31,347,717	9,434,476	7,515,223	150,345
All other points.....	12,384,655	96,832,179	.....	9,584,821
Pacific— Dredges.....	5,845,684	41,483,057	.....	5,095,316
Grand total.....	35,637,373	11,708,627	.....	16,803,943
*Estimate exceeded by this amount.	.....	178,341,405	.....	33,86

THREE YEARS OF LOCK WORK.

Review of Concrete Construction at Gatun, Pedro Miguel, and Miraflores.

Placement of concrete for the Gatun Locks was begun on August 24, 1909, and on August 24, 1912, 91.95 per cent of the 2,055,000 cubic yards required in their construction had been laid. The amount in place at the close of that day was 1,889,673 cubic yards, leaving to be placed approximately 165,000 cubic yards.

An average of 1,075 cubic yards per working day was laid during the year ending August 24, 1912. During the year ending August 24, 1911, the daily average was 2,911 cubic yards. The decrease is due to the completion of the heavy masonry.

Concrete for the upper and intermediate locks, exclusive of the south approach wall, was practically completed by September 1, 1911, and about 38.62 per cent of the concrete for the lower level was in place at that time. During the past year, the mass work for the lower level, exclusive of the north approach walls, has been completed, leaving about 153,000 cubic yards of concrete yet to be placed. At the upper end of the Locks, piers and arches for the wing walls were completed, and the cellular approach wall, for which the first concrete was laid on September 30, 1911, is within three per cent of completion.

As the heavy masonry was brought to completion, mixer production was decreased. Early in September, 1911, the construction plant, with eight two-cubic yard mixers, began to reduce production by using fewer of the cubes continuously, though the number in use on any day was affected by immediate conditions. From August 24 to December 31, 1911, the average number of mixers used was 5.3; from January 1 to June 1, 1912, the average was 3.43. From May 9 to August 2, only two mixers were in use. Since August 2, work on the upper approach wall, which had been suspended for three months to allow the part of the wall already erected to settle, has been hastened, and two and three mixers have been in daily use. The average number for the year, August 24, 1911 to August 24, 1912, was 4.05.

The auxiliary mixing plant, equipped with two two-cubic yard mixers, used both of them continuously until February 6, 1912, from which date to the time the plant was closed down, on March 11, 1912, it had a daily average of 1.21 mixers, not counting five days on which the plant was closed. Note of the closing and removal of this plant, with a résumé of its operations, was made in THE CANAL RECORD of March 27, 1912.

The placement of concrete from month to month, since the beginning of the work is shown in the following table:

MONTH.	1909	1910	1911	1912
January.....	54,136	72,919	34,983	
February.....	55,696	72,103	26,664	
March.....	60,998	86,884	27,532	
April.....	63,227	67,361	11,600	
May.....	74,273	67,844	7,745	
June.....	89,401	55,305	6,095	
July.....	84,001	71,046	8,093	
August.....	1,298	85,686	66,928	*5,617
September.....	12,294	76,720	57,298	
October.....	29,378	86,949	53,636	
November.....	30,270	75,152	43,907	
December.....	42,832	80,212	43,590	
Total.....	116,072	886,451	758,821	128,329

*August 1 to 24, inclusive.

In accord with the approach to completion of the concrete work, the hauling of

sand from Nombre de Dios was discontinued on November 17, 1911. On December 29, 1911, shipments of Chamé sand began from the Pacific Division, and were continued during January, February and March, a total of 20,315 cubic yards being received. Arrangements were then made for securing sand from one of the dredges filling into the Dam from the old bed of the Chagres River, north of the north toe of the Dam, and since May 15, 1912, 40,025 cubic yards have been received from this source, 1,265 yards in cars, and 38,760 yards in barges, which were unloaded by the cableways.

The rock crushing plant at Porto Bello was closed on April 30, 1912.

The steel back, side, and culvert forms were sold through bids opened on May 8, 1912.

Two of the three duplex cableways, which had been engaged in placing concrete in the lower level, were devoted, early in 1912, to the placing of backfill and of dry fill in the center wall, and only one of the four sets is now in use for placing concrete.

The wall filling and backfilling for the locks

LOCATION.	Laid up to date.		Remaining to be laid.	
	Plain.	Reinforced.	Plain.	Reinforced.
Northeast wing wall.....	7,156		5,267	
North center guide wall.....		33,157		605
Northwest wing wall.....	7,466		6,415	
Forebay—East wall.....	44,682	329	437	92
Forebay—Center wall.....	60,579	2,001	30	58
Forebay—West wall.....	54,833	262	514	98
Forebay—Floors.....	13,650			
Lock proper—East wall.....	172,350	3,446	205	
Lock proper—Center wall.....	195,529	5,110	352	
Lock proper—West wall.....	130,995	4,170	169	
Lock proper—Floors.....	64,272		Completed.	
Southeast wing wall.....		4,844	612	
South center guide wall.....	55,414	121	9,155	9,268
Southwest wing wall.....	3	4,730	Completed.	Completed.
Northeast core wall.....			1,625	
Northwest core wall.....	897		433	
Around ducts area "A".....		288		
Around ducts area "C".....		99		
Totals.....	807,826	58,557	25,214	10,121
	866,383		35,335	

proper is nearly completed. In April, 1912, dumping was begun to extend the east backfill of the upper lock to the nearby hill, to form a dam with its tops at 92 feet above sea-level. The east dam is within two per cent of completion.

The principal concrete work yet to be done for the Locks will be on the lower wing and approach walls. No concrete has been placed there, the sites being under water, while dipper and pipe-line suction dredges are excavating for rock foundation.

The approximate distribution of the concrete remaining to be placed is, as follows:

	Cu. Yds.
Paving.....	10,000
Valves.....	2,000
North approach walls.....	153,000
Total.....	165,000

LOCK BUILDING AT PEDRO MIGUEL.

The third year of lock building at Pedro Miguel ended on September 1, and the period closed with concrete construction well advanced. On that date, out of the total amount to be laid, 901,718 cubic yards, there remained, based upon the estimate of November 1, 1911, a total of 35,335 cubic yards, 25,214 cubic yards of which are plain concrete, and the remainder, 10,121 cubic yards, reinforced concrete. The remaining work is confined to the northeast and northwest wing walls, the northeast core wall, the south center guide wall, and some detail work in connection with the finishing of the lock. The two features of Pedro Miguel lock completed, so far as concrete placement is concerned, are the floors, and the southwest wing wall. It is expected

that the greater part of the concrete remaining will be in place by January 1, 1913.

The total concrete placed during the first year of operations in this lock, namely, from September 1, 1909 to September 1, 1910, was 257,308 cubic yards, place measurement, or an average of over 843 cubic yards each working day; the amount placed during the ensuing year was 446,101 cubic yards, place measurement, or an average of over 1,462 cubic yards each working day, and the amount placed in the third year ending September 1, 1912, was 162,974 cubic yards, place measurement, or over 532 cubic yards for each working day. As will be noted, the year of greatest work at this lock was that of 1910-1911, when the permanent handling plant was in complete operation, and the concrete placed was largely massive in character.

The amount of concrete laid up to September 1, 1912, and the amount remaining to be laid as of that date, divided into plain and reinforced concrete, in the various parts of the lock, based upon the estimate of November 1, 1911, is shown in the following table:

The estimate of November 1, 1911 had been exceeded on September 1, 1912, in various features of lock construction, in the following amounts: Floors, 415 cubic yards of plain concrete; east wall, 573 cubic yards of reinforced concrete; center wall, 20 cubic yards of reinforced concrete; west wall, 236 cubic yards of reinforced concrete; southeast wing wall, 914 cubic yards of reinforced concrete; around ducts in area "A," 69 cubic yards, and around ducts in area "C" 56 cubic yards, all reinforced concrete.

MIRAFLORES LOCKS.

The concrete work at Miraflores Locks was begun in February, 1910, but for the first seven months the amount placed was small. The output was from portable mixers, operated under difficulties, or by hand, and was used principally in the construction of the floors and floor culverts. As soon as the berm and chamber cranes at Pedro Miguel could be spared, and upon their transfer to Miraflores, the work went forward more rapidly. The installation of the Miraflores permanent mixing and handling plant was completed in October, 1911, but operations with a part of the plant had been in progress for some months previous. From the beginning of the work in February, 1910, up to September 1 of that year, there had been laid in the locks a total of 11,898 cubic yards, place measurement. During the period, September 1, 1910 to September 1, 1911, there was a decided increase in placement, the total aggregating 353,074 cubic yards, place measurement, or an average of 1,157 cubic yards each working

day. The year of greatest work at these locks was that of September 1, 1911 to September 1, 1912, when 803,263 cubic yards, place measurement, were mixed and laid. The greatest concrete output at any of the locks of the Canal in any one month was that of April, 1912, at Miraflores, when 97,735 cubic yards, place measurement, were handled, an average of 3,759 cubic yards each working day of the

month. The greater part of the massive concrete in these locks is now in place, and the output from this time on will show a reduction. The amount of concrete laid to September 1, 1912, and the amount remaining to be laid as of that date, divided into plain and reinforced concrete, in the various parts of the locks, based upon the estimate of November 1, 1911, is shown in the following table:

LOCATION.	Laid up to date.		Remaining to be laid.	
	Plain.	Reinforced.	Plain.	Reinforced.
Northeast wing wall.....		778		2,638
North center guide wall.....		26,349		16,668
Northwest wing wall.....		210		3,264
Forebay—East wall.....	52,101	101	995	1,015
Forebay—Center wall.....	61,488	246	727	754
Forebay—West wall.....	43,499	401		715
Forebay—Floors.....	18,501		2,828	
Lock proper—East wall.....	293,491	2,580	10,188	3,080
Lock proper—Center wall.....	332,497	1,714	45,407	4,526
Lock proper—West wall.....	241,463	2,023	54,637	3,637
Lock proper—Floors.....	82,197		6,513	
Southeast wing wall.....	3,219		4,435	
South center guide wall.....	4,866		76,959	
Southwest wing wall.....			6,898	
Northeast core wall.....				
Northwest core wall.....	150			
Around ducts in operating tunnel "A".....		227		
Around ducts in operating tunnel "B".....				
Around ducts in operating tunnel "C".....		134		
Totals.....	1,133,472	34,763	209,587	36,297
		1,168,235		245,884

The estimate of November 1, 1911 had been exceeded on September 1, 1912, in various features of lock construction, in the following amounts: West wall, 304 cubic yards of plain concrete; around ducts in operating tunnel "A," 93 cubic yards of reinforced concrete; around ducts in operating tunnel "C," 50 cubic yards of reinforced concrete.

Church Work.

A special meeting of the Woman's Altar Guild of Christ Church, Colon, was held at the home of the president on Friday afternoon, September 6. The report from the recent entertainment, given by the guild in the Commission clubhouse, showed that the sum of \$50 was added to the altar fund. The fund has now reached nearly \$250, and plans for the new altar are being made.

The various corps of the Salvation Army in the Canal Zone held memorial services and street parades on Sunday, September 1, in honor of the late commander, General Booth, who died in London last month. Changes are pending in the administration of the local work. The territorial commander, Col. Sydney Maidment, will leave for Canada to assume the post of secretary to Commissioner Rees, and Col. Charles Rothwell of London will take the post of territorial commander, with headquarters at Kingston, Jamaica.

Red Cross Finances.

The financial statement of the Canal Zone chapter, American National Red Cross, for the month of August, 1912 is, as follows:

July 31. On hand..... \$2,058.36

DISBURSEMENTS.

August 14. Expenses incurred by chairman, Cristobal section..... \$2.00
August 23. Relief of Canadian stranded at Colon... 25.00
August 25. Relief of destitute patient at Ancon Hospital..... 25.00

Total disbursement..... 52.00
August 31. Balance on hand..... \$2,006.36

JOHN L. PHILLIPS, Treasurer.

Approved:
C. A. DEVOL, Chairman.

National Revolver and Pistol Championship Matches.

The Culebra Pistol Club will hold an open championship match for the Canal Zone and the United States at the range in Culebra on September 28 to October 6, 1912, both dates

inclusive. The range will be open all day on September 29 and October 6, and from 12 to 2, and 5 to 7 o'clock each afternoon of September 28 and 30, and October 1, 2, 3, 4, and 5, provided contestants make arrangements beforehand.

The match will be shot under the rules of the United States Revolver Association, and will be held synchronously with matches at different ranges in the United States. There will be five events, all at 50 yards, on the standard American target with 8-inch bullseye, as follows:

Match A, revolver championship—Fifty shots, any revolver, with any ammunition.

Match B, pistol championship—Fifty shots, any pistol, with any ammunition.

Match C, military championship—Seventy five shots, military revolver or magazine pistol, with full charge service ammunition.

Match D, military record match—Twenty-five shots, military revolver, with service ammunition.

Match F, pocket revolver championship match—Twenty-five shots, pocket revolver with service ammunition.

The entry fee for matches A, B and C will be \$3 each for members of the U. S. R. A., and \$5 for all nonmembers; no reentries allowed; match D \$1, reentries permitted; match F, \$2, no reentries allowed.

Entrants should communicate with L. D. Cornish, Culebra, Canal Zone.

Gold, silver, and bronze medals will be awarded as first, second, and third prizes.

Opening of the Canal Zone Schools.

The public schools of the Canal Zone will open Tuesday, October 1, at 9 a. m.

All children of the Canal Zone, whether of employes or nonemployes, and all children of nonresident employes of the Isthmian Canal Commission, are entitled to free school privileges. No child will be admitted, however, who will not be six years old on or before February 1, 1913.

White schools will be opened at Ancon,

Pedro Miguel, Paraiso, Culebra, Empire, Las Cascadas, Bas Obispo, Gorgona, Gatun, Cristobal, and Porto Bello.

Colored schools will be opened at Ancon, Miraflores, Pedro Miguel, Paraiso, Cucaracha, Culebra, Empire, Mandingo, Cruces, Matachin, Gorgona, Gatun, Mount Hope, Cristobal, and Majagual.

High schools will be conducted, as follows: A branch high school at Gatun for first and second year pupils, residing at Cristobal and Gatun.

A branch high school at Empire for first and second year pupils, residing at Gorgona and Culebra, and intermediate points.

The consolidated high school at Ancon for first and second year pupils, residing south of Culebra, and for all third and fourth year pupils in the Zone.

Pupils attending the high schools at Gatun and Empire will report at 9 o'clock Tuesday morning, October 1; those attending the consolidated high school at Ancon will report at 1.15 p. m., on that date.

Requests should be made to this office immediately for railroad transportation for all white children living in communities where schools of appropriate grades, or brake service, are not provided.

FRANK A. GAUSE,

Approved: Superintendent of Schools.

M. H. THATCHER,

Head of Department of Civil Administration.

Ancon, C. Z., September 7, 1912.

Services on Day of Atonement.

Divine services will be conducted on Friday, September 20, which, in the Jewish calendar, is the beginning of "Yom Kipur," or the Day of Atonement, at 6.30 p. m., and on Saturday, September 21, at 8.30 p. m., in the room on the upper floor of the Panama Government's school for girls, corner of Second and Bolivar streets, and Bottle alley. All Israelites in Colon, and in the Canal Zone, are invited to attend.

L. S. SIMONS, Honorable Secretary.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Empire, C. Z., Sunday, September 15, 1912, at 5.45 p. m. The program follows:

1. March—*The Hero of the Isthmus*.....Lampe (Respectfully dedicated to Col. Geo. W. Goethals.)
2. Selection—*Madam Sherry* (By request).....Hoschna
3. Waltz—*Tres Jolie*.....Waldteufel
4. Overture.....Selected
5. Popular number.....Selected
6. Broadway Review.....Lampe
7. Selection—*Floradora* (By request).....Stuart
8. Medley of popular songs.....Williams
9. Grand fantasia—*Home, Sweet Home, the World Around*.....Lampe

OLIVER KIMBALL, Acting Musical Director.

The next concert will be given at Paraiso, C. Z., on September 22.

Misdirected Letters.

ANCON, C. Z., September 11, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of the addressees:

Beeler, Wm. Donald	Meginniss, Charles D.
Briggs, Thornton	Neafsey, William
Brinkerhoff, G. L. (3)	Paik, Ivan
Boye, John W.	Smith, Robert
Cooper, Willie	Solomon, Jos.
Cushing, Thomas	Sommers, F. C. (pkg.)
Dooley, Alex	Stephens, Edmund W.
Hanson, Mrs. Ben	Straker, Mrs. Clara
Heide, Mrs. Wilfred S.	Taylor, Richard G.
Higley, Homer	Trent, Burton W. (2)
Horan, Thomas	Turner, Wm. M.
Low, F. E.	Wood, M. A.

DAY AND DATE.	STATION.			
	Vigia.	Alhajuela	Gamboa.	Gatun Lake.
Sun., September 1 . . .	126.6	93.0	45.4	38.9
Mon., September 2 . . .	133.4	98.1	47.8	39.4
Tue., September 3 . . .	136.0	99.8	52.4	40.1
Wed., September 4 . . .	128.9	94.9	48.3	40.6
Thur., September 5 . . .	128.9	94.2	47.2	41.0
Fri., September 6 . . .	127.4	93.8	47.2	41.4
Sat., September 7 . . .	127.0	93.3	46.4	41.6
Height of low water to the nearest foot	125.0	91.0	44.0	

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning September 11, 1912:

FRESH MEATS.	Price.
Mutton—Stewing per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire forequarter (not trimmed, 10 pounds and over), per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Leg (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	16
Chops, per pound.....	24
Loin for roasting, per pound.....	24
Cutlets, per pound.....	28
Pork—Loin chops or roast, per pound.....	18
Beef—Suet, per pound.....	2
Soup, per pound.....	5
Stew, per pound.....	8
Plate, No. 1, per pound.....	9
Corned, No. 2, per pound.....	14
Corned, No. 2, per pound.....	12
Chuck roast (3 pounds and over), per pound.....	12
Pot roast, per pound.....	15
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds), per pound.....	18
Sirloin roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, chuck, per pound.....	12½
Round, per pound.....	13
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds), per pound.....	20
Tenderloin (Western), per pound.....	25
Venison (Imported), Stew, per pound.....	6
Forequarter (not under 6½ pounds), per pound.....	9
Rack (not under 5½ pounds), per pound.....	20
Saddle (not under 7½ lbs.), per pound.....	20
Leg (not under 9 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
MISCELLANEOUS.	
Pate de Foie Gras, jar.....	55
Livers—Beef, per pound.....	11
Calf, each.....	60
Half, each.....	30
Steak Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	11
Frankfurter, per pound.....	12
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	19
Sweetbreads—Beef, per pound.....	25
Eggs, fresh, dozen.....	30
one-half dozen only.....	15
Bluefish, per pound.....	12
Halibut, fresh, per pound.....	12
Salmon, fresh, per pound.....	22
Fluke, fresh, per pound.....	10
Shads, fresh, each.....	50
Roos, shad, pair.....	25
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds each.....	1.25
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00
Fowls, each.....	1.60, 70, 80, 90,
Ducks, (Western, about 4½ pounds,) each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	35
Capons, each.....	2.10
Ducks, blackhead, pair.....	60
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants, per pair.....	1.30
CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound.....	36
Sugar cured, per pound.....	20
Sliced, per pound.....	21
Half, for boiling, per pound.....	22
Boiled, per pound.....	28
Hocks, per pound.....	78
Beef, salt, family, per pound.....	12

Bacon—Breakfast, whole piece, per pound.....	23
sliced, per pound.....	24
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00
Pigs' feet, per pound.....	9
Tongues, per pound.....	18

DAIRY PRODUCTS.

Butter—Creamery, special, per pound.....	38
Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	45
Young America, per pound.....	22
Swiss, per pound.....	1.00
Edam, each.....	1.00
Parmesan, per pound.....	35
Edam, tin.....	26
Gouda, per pound.....	10
Milk (Certified), per bottle.....	**20
Butter, bottle.....	**15
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	225
½ gallon.....	750

VEGETABLES AND FRUITS.

Beets, per pound.....	4
Celery, per head.....	8
Cabbage, per pound.....	4
Cucumbers, per pound.....	9
Carrots, per pound.....	4
Lettuce, per pound.....	12
Onions, per pound.....	3½
Potatoes, white, per pound.....	3½
sweet, per pound.....	3
Squash, per pound.....	5
Turnips, per pound.....	3
Tomatoes, per pound.....	*5
Yams, per pound.....	3
Apples, per pound.....	5
Cantaloupes, each.....	8
Grapes, Malaga, per pound.....	*12
Grape Fruit, each.....	4
Lemons, dozen.....	24
Limes, per 100.....	80
Plums, per pound.....	11
Oranges, Jamaica, per dozen.....	12
Pineapples, each.....	12½
Watermelons, each.....	135
Peaches, per pound.....	110

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

††Fowls weigh each about, as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock next lightest weight is supplied and refund note sent for difference.

‡Sold only from commissaries; no orders taken for delivery.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending September 7:

Allianca, September 2, from New York, with 102 pieces steel beams, for Pacific Division; 97 barrels asphalt, 36 crates rolled copper, for fortifications; 250 pieces steel knuckles, 136 pieces car couplers, 26 bundles steel bars, for Mechanical Division; 47 bales rubber hose, 16 bundles baskets, 110 drums paint, 67 barrels flour, 60 bundles roofing iron, 100 kegs red lead, 13 cases varnish, 68 bundles handles, 34 cases caustic soda, 26 bales waste, for stock; and a miscellaneous cargo, the whole consisting of 1,376 packages, weighing 150 tons.

Prinz Joachim, September 2, from New York, with 180 bales oakum, 15 cases hardware, for stock.

Greenbrier, September 4, from New York, with 15 cases benzine, 16 cases tape fuse, seven cases hardware, for stock.

Sarnia, September 4, from Hamburg, with 18 cases thrust screws, for superintendent of erection.

Almirante, September 4, from New York, with 10 cases paint, 20 cases lead washers, 102 cases soap, for stock; 12 crates stovepipe, for Pacific Division; 60 packages castings, 208 packages track material, for superintendent of erection.

Grunewald, September 5, from Hamburg, with 24 cases thrust screws, for superintendent of erection.

Heredia, September 5, from New Orleans, with 247 pieces piling, 1,815 pieces lumber, four pieces steam-shovel chains, 91 pieces castings, 98 sacks feed, for stock; 926 pieces lumber, for Mechanical Division.

Oxonian, September 7, from Liverpool, with three reels hoisting cable, for Pacific Division.

Lewis Luckenbach, September 7, from San Francisco, with 969 bales alfalfa hay, 10 drums bisulphide, three cases brushes, for stock.

Married.

DOBY-VICKNAIR—At Cristobal, on September 5, 1912, by Judge Thomas E. Brown, Jr., Mary Evelyn Vicknair of New Orleans, Louisiana, to Walter F. Doby of Lexington, North Carolina. Canal Zone residence, Paraiso.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Ancon.....	P. R. R. Thursday.....	Sept. 12
Panama.....	P. R. R. Saturday.....	Sept. 14
Allianca.....	P. R. R. Friday.....	Sept. 20
Colon.....	P. R. R. Tuesday.....	Sept. 27

CRISTOBAL TO NEW YORK.

Colon.....	P. R. R. Sunday.....	Sept. 15
Advance.....	P. R. R. Saturday.....	Sept. 21
Panama.....	P. R. R. Friday.....	Sept. 27
Allianca.....	P. R. R. Thursday.....	Oct. 3
Colon.....	P. R. R. Wednesday.....	Oct. 9

NEW YORK TO COLON.

Santa Marta.....	U. F. C. Wednesday.....	Sept. 4
Prinz August Wilhelm.....	H. A. Saturday.....	Sept. 7
Turrialba.....	U. F. C. Saturday.....	Sept. 7
Metapan.....	U. F. C. Wednesday.....	Sept. 11
Trent.....	R. M. Saturday.....	Sept. 14
Tivives.....	U. F. C. Saturday.....	Sept. 14
Prinz Sigismund.....	H. A. Saturday.....	Sept. 14
Zacapa.....	U. F. C. Wednesday.....	Sept. 18
Sixaola.....	U. F. C. Saturday.....	Sept. 21
Prinz Joachim.....	H. A. Saturday.....	Sept. 21
Almirante.....	U. F. C. Wednesday.....	Sept. 20
Magdalena.....	R. M. Saturday.....	Sept. 28
Prinz Eitel Friedrich.....	H. A. Saturday.....	Sept. 28
Carrillo.....	U. F. C. Saturday.....	Sept. 28
Santa Marta.....	U. F. C. Wednesday.....	Oct. 2
Prinz August Wilhelm.....	H. A. Saturday.....	Oct. 5
Turrialba.....	U. F. C. Saturday.....	Oct. 5
Metapan.....	U. F. C. Wednesday.....	Oct. 9
Tivives.....	U. F. C. Saturday.....	Oct. 12
Clyde.....	H. A. Saturday.....	Oct. 12
Prinz Sigismund.....	H. A. Saturday.....	Oct. 12

COLON TO NEW YORK.

Almirante.....	U. F. C. Thursday.....	Sept. 12
Prinz Eitel Friedrich.....	H. A. Monday.....	Sept. 16
Magdalena.....	R. M. Tuesday.....	Sept. 17
Carrillo.....	U. F. C. Tuesday.....	Sept. 17
Santa Marta.....	U. F. C. Thursday.....	Sept. 19
Prinz August Wilhelm.....	H. A. Monday.....	Sept. 23
Turrialba.....	U. F. C. Tuesday.....	Sept. 24
Metapan.....	U. F. C. Thursday.....	Sept. 26
Prinz Sigismund.....	H. A. Monday.....	Sept. 30
Clyde.....	R. M. Tuesday.....	Oct. 1
Tivives.....	U. F. C. Saturday.....	Oct. 1
Zacapa.....	U. F. C. Thursday.....	Oct. 3
Prinz Joachim.....	H. A. Monday.....	Oct. 7
Sixaola.....	U. F. C. Tuesday.....	Oct. 8
Almirante.....	U. F. C. Thursday.....	Oct. 10
Prinz Eitel Friedrich.....	H. A. Monday.....	Oct. 14
Carrillo.....	U. F. C. Tuesday.....	Oct. 15
Oruba.....	R. M. Tuesday.....	Oct. 15

NEW ORLEANS TO COLON.

Abangarez.....	U. F. C. Saturday.....	Sept. 7
Heredia.....	U. F. C. Wednesday.....	Sept. 11
Atenas.....	U. F. C. Saturday.....	Sept. 14
Heredia.....	U. F. C. Wednesday.....	Sept. 18
Parismina.....	U. F. C. Saturday.....	Sept. 21

COLON TO NEW ORLEANS.

Heredia.....	U. F. C. Thursday.....	Sept. 12
Cartago.....	U. F. C. Thursday.....	Sept. 12
Abangarez.....	U. F. C. Thursday.....	Sept. 19
Atenas.....	U. F. C. Thursday.....	Sept. 26
Heredia.....	U. F. C. Thursday.....	Sept. 26

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston, at 10 a. m., on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* sail at 2 p. m., and call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m.

The following vessels arrived at, or departed from, the port of Balboa during the week ending September 7:

Arrivals—September 1, *Ecuador*, from Guayaquil; September 2, *Mexico*, from Valparaiso; September 3, *Luckenbach*, from San Francisco; September 3, *Pachilea*, from Callao; September 4, *Chile*, from Guayaquil.

Departures—U. S. S. *Californian*, to Corinto; September 3, *Aysen*, to Valparaiso; September 3, *Peru* (P. S. N.), to Guayaquil; September 7, *San José*, to San Francisco.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, SEPTEMBER 18, 1912.

No. 4.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission for the month of August is published in full on Pages 28, 29, 30, 31, 32 and 33 of this issue of THE CANAL RECORD, which consists of 12 pages. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Highest Monthly Steamshovel Record.

Steamshovel No. 257 (J. H. LaRowe, engineer; Austin, Ashley, and Simonson, cranesmen,) working in the west borrow pit for Gatun Dam, excavated during the month of August a total of 86,844 cubic yards of earth and rock. This is the highest monthly record for a shovel of any class since the beginning of operations by the Canal Commission.

New Contract for Supplying Cement.

Bids were opened in Washington on September 3, for furnishing the cement required to complete the Canal, estimated at 1,000,000 barrels, more or less. Only two tenders were received. The manufacturers of Alpha and Lehigh cement, combined, offered to supply their products at the price of \$1.51 per barrel, in barrels; and \$1.91 per barrel, in bags, the price in bags to be subject to a rebate of 10 cents a bag, delivery to be made at Jersey City, or Santa Cruz, California. The Portland Cement Company offered to supply their product at the rate of \$1.97 per barrel, in bags, only, subject to 10 cents rebate per bag, delivery to be made at San Francisco.

In connection with the advertisement for proposals, a letter was received by the General Purchasing Officer at Washington, from the Atlas Portland Cement Company, the former contractors, offering to continue deliveries as may be needed to complete the work on the Canal, at the price obtaining under their former contract. Under the contract referred to, cement was supplied the Canal Commission at the rate of \$1.60 per barrel, in bags, from which there was deducted a credit of

68 cents, representing the value of eight sacks to the barrel at 8½ cents each, making the net price per barrel 92 cents.

The Alpha and Lehigh manufacturers were the lowest bidders of the two above mentioned, and, on the basis of their bid of \$1.91 per barrel, in bags, less eight sacks to the barrel, amounting in value to 80 cents, the net price to the Canal Commission would be \$1.11 per barrel, or 19 cents more per barrel than the price named in the contract with the Atlas company.

The Chairman and Chief Engineer has recommended, subject to the approval of the Secretary of War, that a new contract be entered into with the Atlas Portland Cement Company, to supply all cement required to complete the Canal, in accordance with their written offer.

West Upper Lock Wall at Miraflores Nearing Completion.

The concrete work in the west wall of the upper lock at Miraflores will be brought to completion during the latter part of September, which will permit the removal of berm crane "G" into the lower lock. On account of the under clearance of the boom on the berm crane, the backfill of the west wall cannot be brought higher than 15 feet below the top of the wall at the present time. As soon as the crane is moved, the backfill will be built to grade as rapidly as possible to allow the laying of a construction track, so that the First Division may begin operations at this point.

Bids on Panama Railroad Terminal in Panama.

Bids were opened at the office of the Panama Railroad Company in Colon, on Tuesday, September 10, for the construction of the new railroad terminal in Panama. The work was divided into two parts, namely, the erection of the main station building, and the building of the baggage room wing, including the razing of the present station. Five bids were received, as follows:

Central American Construction Company—Main building, \$59,032; baggage wing, \$29,000. Total, \$88,032.

J. W. Sneed—Main building, \$64,300; baggage wing, \$26,221. Total, \$90,521.

J. A. Wilson and J. Preston Moore—Main building, \$70,775; baggage wing, \$40,775. Total, \$111,550.

W. E. Weigle—Main building, \$94,000; baggage wing, \$21,000. Total, \$115,000.

J. G. Duque—Main building, \$112,200; baggage wing, \$22,500. Total, \$134,700.

The Central American Construction Company was the lowest bidder on the main building, and W. E. Weigle on the baggage wing, the two bids aggregating \$80,032. A supplementary bid was made, however, by the Central American Construction Company, which stated that if the company was awarded the contract for both buildings, it would do the work for the sum of \$81,500. The committee

appointed to consider the bids, consisting of Lieut. Frederick Mears, R. L. Mock, and H. E. Bartlett, reported against dividing the work, for the reason that it could be more advantageously handled by one company than by two, inasmuch as there would probably be less controversy, and more assurance of satisfactory completion. The contract has been awarded to the Central American Construction Company at \$81,500.

Borrow Pits for Gatun Dam.

Since the shipment of spoil from the Central Division excavation to Gatun Dam was discontinued, with the opening of the single track relocated line of the Panama railroad on February 15, 1912, a system of borrow pits, the largest for any feature of the Canal and railroad construction, has been developed to the west and north of the Dam for supplying dry fill for both wings. The new pits are a development separate from the red clay borrow pits, which have been furnishing material for the cores of the wings. The first of these was located west of the Spillway discharge channel, and operations were carried on in it from December 29, 1910, until July, 1912, when the two shovels were transferred to the present red clay pit north of the Spillway hotel.

Four shovels are excavating in the large earth and rock borrow pit beyond the west end of the Dam. The development of this pit has been carried on with the twofold purpose of obtaining a large quantity of spoil within a comparatively short distance and of loading a large part of it on a level with or above the high levels of the Dam, in order to facilitate transportation. The site lay up a narrow ravine, between the high hill against which the west end of the Dam rests, and a lower hill to the east, the latter of which was to furnish the bulk of the material required, amounting to about 2,500,000 cubic yards. Excavation was begun against the face of the higher hill, at 80 feet above sealevel. The first shovel advanced up a grade of one per cent to elevation plus 110 feet, and proceeded with the development of a pit and the excavation of the low hill on that level. Another shovel made a parallel cut along the west side of the ravine, on a down grade of one per cent to reach the 80-foot level. The saddle between the main ridge and the low hill was cut down first to the 110-foot level, and later, to the 80-foot level, a trestle being built across the deep cut to carry the track connecting with the upper bench of the main borrow pit, the topography being such that it proved necessary to switch back on both levels to reach the site with easy grades. Shovels, working at 110 feet above sealevel, have excavated all but about 100,000 cubic yards above that elevation on the lower hill, preparing, in the meantime, an even plateau against which the shovels on the 80-foot level can operate on a 30-foot face, which has been found to be the

(Continued)

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.										Total.	
				2-cubic yard mixers.			½-cubic yard mixers.				1-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.				Cu. Yds.			Cu. Yds.	
September 9	754	21.00	6	972	14.00	2	81	6.50	1	227	27.00	3			2,034
September 10	550	18.67	6	1,014	14.42	2	117	9.00	1	244	28.00	3			1,925
September 11	466	12.08	5	984	13.75	2	141	12.00	2	218	29.50	4			1,809
September 12	454	13.50	7	966	14.33	2	117	8.00	2	217	31.50	3			1,754
September 13	618	23.92	7	872	14.00	2	22	2.00	1	296	35.50	5			1,808
September 14	348	22.83	6	960	18.00	2	17	1.00	1	253	31.50	6			1,578
Total	3,190	112.00	6.17	5,768	88.50	2	495	38.50	1.33	1,455	183.00	4.17			10,908
Previously reported													3,693		1,199,878
Grand total													3,693		1,210,786

COMMISSARY SALES.

Large Increase in Fiscal Year 1911-1912, Compared With the Preceding Twelve Months.

The business of the commissary department of the Panama Railroad Company during the fiscal year ending June 30, 1912, aggregated \$6,702,355.68, an increase of \$921,055.27, or about 16 per cent, over the preceding year. The increase in stock was mainly represented by groceries, cold storage supplies, and footwear. A classified statement of importations, the figures being for cost, insurance, and freight paid, delivered on the Isthmus, follows:

CLASS.	1911.	1912.
Groceries.....	\$1,278,594.79	\$1,529,845.41
Hardware.....	86,768.86	99,947.78
Dry goods.....	603,490.18	851,072.15
Boots and shoes.....	164,168.89	259,869.25
Cold storage supplies.....	1,573,202.97	1,965,082.64
Furniture.....	9,020.48	10,492.85
Tobacco.....	182,590.96	208,489.88
Raw material.....	315,375.22	342,146.38
Stationery.....	54,579.70	58,461.73
Total.....	\$4,267,792.05	\$5,325,408.07

There were heavy increases in the importations of groceries, hardware, dry goods, boots and shoes, cold storage provisions, and tobacco, the notable increases being in groceries, dry goods, and boots and shoes. On many articles of staple groceries prices were reduced. Boots and shoes, and dry goods generally were sold at lower prices than similar goods in the United States. Owing to the large volume of business, and to the institution of various economies, it was possible to reduce the surcharge on most of the standard lines of shoes, and on a great many articles of wearing apparel. During the latter part of the fiscal year, there was a phenomenal advance in the price of all meats, especially beef, the latter reaching a point during the month of June, 1912, never before equalled in the United States. However, with but few exceptions, the price of beef at the commissaries was kept down to the same figure of the previous year.

On account of the abandonment of the old track of the Panama railroad, between Gatun and Gorgona, and the completion of work on the relocation, the commissaries at Camp Totten, Tabernilla, and San Pablo, were closed during the year, while new ones were opened at Camp Bierd, Miraflores, and Naos Island. Nineteen commissaries were in operation at the close of the fiscal year.

The following table gives the importations of meat and dairy products, in comparison with the figures for the fiscal year 1910-11:

ARTICLE.	1911	1912
Fresh meats, lbs.....	5,454,989	6,453,138
Cured and pickled meats, lbs.....	3,786,869	976,445
Cheese, lbs.....	110,415	142,786
Eggs, doz.....	692,060	725,580
Butter, fresh, lbs.....	429,267	427,683
Poultry, lbs.....	554,028	503,590
Fresh milk, gals.....	57,016	81,388
Fresh cream, gals.....	29,950	37,750

Importations of fresh vegetables for the two years were, as follows:

ARTICLE.	1911.	1912.
Potatoes, white.....	5,250,609	5,843,692
Potatoes, sweet.....	787,881	1,016,392
Onions.....	1,151,921	896,850
Turnips.....	107,902	129,310
Beets.....	53,279	61,747
Carrots.....	101,788	135,256
Cabbage.....	640,681	677,234
Yams.....	193,127	300,045
Other vegetables including celery, tomatoes, and other Northern seasonal produce.....	499,952	741,627

The importation of fresh fruits in 1911-12

showed notable increases in nearly all classes over the preceding fiscal year, as follows:

ARTICLE.	1911.	1912.
Apples, lbs.....	668,485	916,622
Peaches, lbs.....	42,958	99,467
Pears, lbs.....	45,637	83,457
Plums, lbs.....	30,825	36,226
Grapes, lbs.....	62,608	92,534
Oranges, doz.....	225,984	171,787
Lemons, doz.....	34,550	36,850
Grape fruit, doz.....	10,446	11,254
Limes, doz.....	6,848	11,225
Cantaloupes, each.....	56,155	62,750
Watermelons, each.....	18,888	34,358
Other fruits, lbs.....	29,480	104,857

Sales and issues to all departments, for the two years, were, as follows:

DEPARTMENT.	1911.	1912.
Isthmian Canal Commission.....	\$1,625,348.77	\$1,734,842.59
United States Government.....	102,138.31	185,375.50
To others, for cash.....	103,706.31	117,496.30
To others, for coupons.....	3,609,358.01	4,280,366.25
Issued to departments of the railroad, and used in operation of commissary.....	208,223.82	275,938.48
Issued to Panama Railroad Steamship Line.....	8,904.09	8,492.77
Condemned and damaged goods, shrinkage, etc.....	98,276.38	99,843.79
Total sales.....	\$5,754,955.69	\$6,702,355.68
Average sales and issues per month.....	479,579.64	558,529.64
Stock on hand, June 30.....	997,175.60	1,166,481.76

MANUFACTURING PLANTS.

Laundry—There was a large increase in the business of this department during the year, 4,243,614 pieces having been handled, as compared with 3,581,923 pieces the previous year. The revenue amounted to \$108,096.83, as compared with \$98,303.29 the preceding year. The average number of employes served monthly was about 7,500.

Bakery—During the year, there were 20,233 barrels of flour used, in comparison with 16,638 the previous year. The product consisted of 6,014,667 loaves of bread, 651,844 rolls, and 114,134 pounds of cake, as against 5,236,474 loaves of bread, 557,557 rolls, and 91,581 pounds of cake the previous year. The value of the product was \$260,865.35, an increase for the year of \$39,513.27.

Coffee roasting plant—During the year, 341,780 pounds of green coffee were roasted, producing 280,909 pounds of roasted coffee, valued at \$64,220.98, an increase over the previous year of \$3,677.12. The high price of coffee continued during the year, but the commissary selling price remained unchanged.

Ice plant—Ice to the amount of 37,248 tons was produced during the year, an increase of 3,981 tons over 1910-11. The value of the product was \$229,535.98, and the increase in revenue for the year, \$23,347.18.

Ice cream plant—The business of this plant increased to such an extent during the year that it became necessary to replace the direct-gear circular motion freezers, with the more modern vertical brine freezers, capable of producing 50 gallons of ice cream each hour. The new freezers are more sanitary, the operators not touching the cream at any stage of the manufacture. The output for 1911-12 was 138,551 gallons, an increase of 28,343 gallons over the previous fiscal year. The value of the product was \$110,993.68, a gain for the year of \$31,674.88. The demand for ice cream grows steadily, and to insure the quality, fresh milk and cream are imported from the United States, in refrigeration, for its manufacture.

Automatic weighing and packing depart-

ment—Goods, in the following amounts were packed by this department during the year:

ARTICLE.	POUNDS.
Rice.....	2,126,532
Flour.....	1,786,194
Coffee.....	288,005
Beans.....	228,633
Peas.....	183,723
Starch.....	73,252
Nuts.....	16,105
Garbanzos.....	3,059
Corn meal.....	2,880
Total.....	4,708,383

The increase in the amount of goods packed over the preceding fiscal year was 792,608 pounds, and the cost of packing was reduced from \$1.90 per ton to \$1.16 per ton.

Beef corning—The experiment of making corned beef showed satisfactory results, and the advantages obtained by buying beef in the carcass, instead of by the quarter, have served largely to keep the prices of fresh beef down to the present low figures in the face of a high market. The output in this department during the year was 263,573 pounds, manufactured from 259,724 pounds of fresh beef, the difference in weight being represented by the amount of moisture that the beef takes up in the process of corning. There were also produced 9,635 pounds of Hamburger steak. The total value of the product in this plant was \$29,594.24.

Butter printing department—During the year, 333,658 pounds of butter were printed, valued at \$122,660.26. The operations of the department has resulted not only in a saving in the price of butter, but has presented it for sale in a much better condition than when purchased in the United States already printed.

Industrial laboratory—The activities of this branch were largely extended during the year, and included the addition of an industrial laboratory to the experimental laboratory, already established. The equipment required for the new laboratory consisted of four steam kettles, one of 125-gallon, one of 75-gallon, and two of 40-gallon capacity; one baking oven, one sterilizer, one bottle washing machine, and two bottle corking machines. The value of the product manufactured was \$10,275.49, some of the principal items being, as follows: Vanilla extract, \$5,115.94; lemon extract, \$1,272.15; coffee extract, \$183.60; denatured alcohol, \$2,129; talcum powder, \$258.25; soap, \$235.93; witch hazel, \$100.80; hydrogen peroxide, \$150.84; bay rum, \$171. During the present year, it is intended to increase the scope of the laboratory by manufacturing tooth powder, toilet preparations of various kinds, etc.

Electric light, power, and refrigerating plant—One A. C. D. C. Westinghouse motor generator set was installed during the year, operated from the power plant at Gatun, and takes the place of two high speed direct current generators, formerly in use. There was also added one boiler feed water weigher for weighing boiler feed water, in order to determine amount of evaporation, as a check against fuel consumption.

Cold storage plant—A new ventilating system for purifying the air was installed during the year. It is operated by a 24-inch motor-driven fan, and is so arranged as to be able to pull in fresh air from the outside, at the same time passing it over refrigerated coils, which are sprayed with a calcium brine. The air is both purified and dried by passing it through this brine bath.

CANAL WORK IN AUGUST.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

Culebra, C. Z., September 13, 1912.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of August, 1912:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry.....	Cubic yards.....	1,974	1,094,132	260,514	1,356,655
Work excavation, wet.....	Cubic yards.....	513,973		572,755	1,086,728
Total work excavation.....	Cubic yards....	515,947	1,094,132	833,274	2,443,353
Plant excavation, dry.....	Cubic yards....				
Plant excavation, wet.....	Cubic yards....				
Total plant excavation.....	Cubic yards....				
Total Canal excavation.....	Cubic yards....	515,947	1,094,132	833,274	2,443,353
Material placed in dams.....	Cubic yards....	244,618		57,621	302,239
Concrete placed in locks and dams.....	Cubic yards....	8,078		81,801	89,879
Explosives used.....	Tons (Gross)....	19.19	162.10	47.44	228.73
Rock drilled.....	Feet.....	29,312	382,100	98,329	509,741
Tracks removed.....	Miles.....		9.44		9.44
New tracks laid.....	Miles.....	3.61	11.32	2.56	17.49
Rock crushed.....	Cubic yards....			70,383	70,383
Cement used.....	Barrels.....	12,799	62	83,520	96,381
New roads built.....	Miles.....	.44			.44
Water mains laid.....	Feet.....	1,170	420	300	1,890
Sewers laid.....	Feet.....	1,358	120		1,478
Open drains and ditches dug.....	Feet.....	42,488	85,083	4,959	132,530
Average daily force.....	Feet.....	4,816	6,320	7,354	18,690
Average rainfall.....	Inches.....	10.92	13.61	8.15	11.98

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the division engineers and the erection subdivision of this office, the inspection of this work being cared for by the masonry and lock structures subdivision. This subdivision is also charged with general inspection of masonry work of all the locks.

INSPECTION OF RISING STEM GATE VALVES.

The work of preparing rising stem gate valve chambers, and installation of valves, etc., is progressing satisfactorily, the following work having been completed to the end of the month:

Gatun—Of the six side wall intake valve chambers, all have been completed and the valves have been installed. Of the 28 sets of operating valves, three sets have been completed, including installation of valves, and three sets of valve chambers have been completed ready for the installation of valves. The work on 15 of the remaining 22 sets of valve operating chambers has been about 33 per cent completed.

Pedro Miguel—Work is proceeding in 11 of the 12 sets of operating valve chambers, and they are approximately 38 per cent completed, but no valves have yet been placed.

Miraflores—No work has been done in any of the 18 sets of operating valve chambers in the locks at this point.

INSPECTION OF SPILLWAY GATES AND CAISSONS.

Gatun—The work of erection of the 14 Spillway gates at Gatun has continued, and the following work was completed at the end of the month: Seventy and six-tenths tons of material were erected, which completes erection of structural material in all the Spill-

way gates at this point; reaming and riveting of the structural material was begun, and the total reaming was about 27 per cent completed, the total riveting being about seven per cent completed on all the gates. No work has been done as yet on the caisson for this spillway.

Miraflores—No work has been done as yet on the eight spillway gates and caisson at this point.

LOCK GATES AND PROTECTIVE DEVICES.

Up to the 20th of August, a total of 57,106 tons of steel plates and shapes were accepted at the rolling mills, of which 1,754 tons were accepted between July 20 and August 20.

Of this last amount, 1,414 tons applied on replacement orders, making a total of 55,692 tons rolled on original order. A total of 44,108 tons of riveted structural steel has been shipped from the Rankin shops, or about 87 per cent of the total contract weight of this class. Of this last item, 1,945 tons were shipped between July 20 and August 20. Up to August 20, shipments have been made of material for lock gates in the following manner: Sixty-four per cent of middle gates, middle locks, and 76 per cent of the lower guard gates at Gatun; 90 per cent of the lower guard gates at Pedro Miguel; 89 per cent of the upper gates, 49 per cent of the middle gates, 24 per cent of the lower gates, upper lock, and six per cent of the lower gates, lower lock, at Miraflores.

LOCK GATE ERECTION.

Gatun—Upper guard gates, 54 feet 8 inches high, leaves Nos. 37 to 40, inclusive—On the fourth of the month, these leaves were finally closed. The amount of work remaining to be done consists of installation of footwalks, manhole covers in the top girders, top fenders, and painting, both interior and exterior. The erection of these leaves began May 27, 1911.

Upper gates, 77 feet high, leaves Nos. 33 to 36, inclusive—Practically all riveting was completed, except in way of false work. End reaction castings on leaf No. 33 were assembled on the quoin end and about 47 per cent riveted. The miter end is being ground in readiness to receive end reaction castings. End reaction castings at quoin end of leaf No. 34 were assembled; wedge fillers are being fitted, and holes drilled. The end reaction castings at quoin end of leaf No. 35 were erected and fitted complete, and the miter end is being ground. This leaf was lowered on its pintle and adjusted in position August 31. Leaf No. 36 has all end reaction castings at quoin end erected and riveted up complete. The

grinding at the miter end was passed upon as satisfactory and was in readiness for the reception of the end reaction castings. This leaf was lowered on its pintle August 22. The erection of these leaves began October 9, 1911.

Middle gates, upper lock, 77 feet high, leaves Nos. 29 to 32, inclusive—Very little work was done on these leaves during the past month, except on leaf No. 30, on which six per cent of the riveting on downstream sheathing was done. On leaves Nos. 31 and 32, about 53 per cent of the riveting on upstream sheathing, and about 47 per cent of the downstream sheathing was done. The erection of these leaves began January 27, 1912.

Safety gates, upper lock, 77 feet high, leaves Nos. 25 to 28, inclusive—The main work on these leaves done during the month consisted of reaming and bolting of sheathing, and a small amount of riveting on leaves Nos. 27, and 28. About 94 per cent of the reaming has been done on leaves Nos. 25 and 26. On leaves Nos. 27 and 28, about 85 per cent of the reaming was done, and 10 per cent of the riveting. The erection of these leaves began April 1, 1912.

Lower gates, upper lock, 77 feet high, leaves Nos. 21 to 24, inclusive—The skeletons of these leaves have been erected complete, with the exception of the top girders on leaves Nos. 21 and 22. About 58 per cent of the riveting of interior framing was done on leaves Nos. 21 and 22, and about 94 per cent of the interior riveting was done on leaves Nos. 23 and 24. About 53 per cent of the upstream sheathing, and about 17 per cent of the downstream sheathing, was erected on leaves Nos. 21 and 22. The upstream sheathing was erected to the entire height on leaves Nos. 23 and 24, and about 60 per cent was in readiness for reaming. On leaf No. 24, the downstream sheathing was erected to the entire height, and on leaf No. 23 about 82 per cent of the downstream sheathing was erected, and about 10 per cent was in readiness for reaming. The erection of these leaves began June 29, 1912.

Middle gates, lower lock, 77 feet high, leaves Nos. 9 to 12, inclusive—The skeletons of these leaves have been erected to their entire height and interior riveting done, with the exception of the top panel. All sheathing is erected, but practically no bolting has been done, except on leaves Nos. 11 and 12. A small percentage of reaming was done on leaves Nos. 11 and 12. The erection of these leaves began April 12, 1912.

Lower gates, lower lock, 77 feet high, leaves Nos. 5 to 8, inclusive—The first girders for leaves Nos. 5, 6, and 8 were placed in the lock chamber on August 29, and for leaf No. 7, on August 30. An additional girder was added to each of these leaves before the end of the month.

Lower guard gates, lower lock, 47 feet four inches high, leaves Nos. 1 to 4, inclusive—At the end of the month, the bottom girders for these leaves were having the heel and upper pintle castings fitted and secured to them.

Pedro Miguel—Upper guard gates, 54 feet eight inches high, leaves Nos. 50 to 53, inclusive—All structural material was in place and the reaming and riveting practically completed before August 10. Thirty per cent of the end reaction castings was erected in place, about 20 per cent of the wedge fillers fitted, and about 15 per cent of the riveting done in way

of these castings. There also remains about 20 per cent of the grinding to be done on the ends of the leaves before the balance of the end reaction castings can be erected. On leaf No. 50, the end reaction castings have been fitted and riveted complete at the quoin end, and, at the miter end, the end reaction castings have been assembled but not adjusted on the leaf. The quoin end of leaf No. 51 has been inspected and end reaction castings erected to the height of four panels; the grinding at miter end is practically completed. At the quoin end of leaf No. 52, the end reaction castings have been erected to the height of eight panels, and wedge filler fitted in three panels; the grinding at the miter end was practically finished, but has not been inspected. The quoin end of leaf No. 53 has all end reaction castings erected and fitted complete; the grinding at the miter end was practically finished, but has not been inspected. Erection of these leaves began August 7, 1911.

Upper gates, 79 feet high, leaves Nos. 54 to 57, inclusive—All structural work was in place before August 1, and all interior rivets driven. The sheathing has been erected, and about 73 per cent bolted, 46 per cent of the reaming done, and about 10 per cent of the rivets driven. No grinding has been done on the ends of the leaves. The erection of these leaves began January 29, 1912.

Middle gates, 79 feet high, leaves Nos. 58 to 61, inclusive—By August 1, the skeletons of these leaves had been completely erected, 91 per cent of the sheathing plates attached, and all interior riveting done. No holes were reamed in sheathing, nor rivets driven. The erection of these leaves began June 18, 1912.

Safety gates, 79 feet high, leaves Nos. 62 to 65, inclusive—All structural work was in place prior to August 1, and all interior rivets driven, 96 per cent of the reaming done, and about 78 per cent of the rivets driven. No ends were ground nor end reaction castings erected. The erection of these leaves began December 15, 1911.

Lower gates, 79 feet high, leaves Nos. 66 to 69, inclusive—No work has been done on these leaves other than as reported for the month of July, 1912. The erection of these leaves began May 1, 1912.

Lower guard gates, 47 feet 4 inches high, leaves Nos. 70 to 73, inclusive—The skeletons of leaves Nos. 70, 71, and 72 have been erected to their full height. Thirty per cent of the riveting has been done in the interior of leaves Nos. 70 and 71, while no riveting has been done on leaf No. 72. Leaf No. 73 has about 40 per cent of the skeleton erected, but no riveting nor reaming has been done.

Miraflores—The work accomplished during the month consisted in the fitting and securing of the heel and upper pintle castings to the bottom girders of leaves Nos. 100 to 103, inclusive (upper guard gates,) and leaves Nos. 112 and 113 (safety gates, upper locks.)

The total tonnage of lock gate material erected on the Canal to September 1, 1912, without regard to its being fully reamed or riveted, was 24,787 tons, out of a total of 58,000 tons, or about 42 per cent. Of this, 1,675 tons, or about three per cent, was erected during the month of August. The total number of field rivets driven was 1,375,888, or about 23 per cent of the total number of field rivets to be driven; of which 213,660, or about three per cent, were driven in August. The tonnage erected was about 48 per cent less than in the preceding month, and the number of

rivets driven was a small number in excess of the preceding month.

LOCK GATE RECESS COVERS.

Of the total of 36 recess covers at Gatun, all of which are erected, 14 remain to be aligned and grouted. At Pedro Miguel, all of the 20 covers for this lock have been erected, but seven remain to be aligned and grouted. At Miraflores, of the 24 recess covers for these locks, eight have been erected and bolted, but none aligned and grouted.

BABBITTING OF HOLLOW QUOINS.

The babbitting of all hollow quoins at Gatun and Pedro Miguel has been completed, and the work inspected and accepted. The hollow quoins for two leaves at Miraflores have been aligned and babbitted, but not accepted to the end of the month.

CHAIN FENDERS.

The material manufactured by the contractors for one complete chain fender machine, and some of the hawsepipe castings for other chain fenders, arrived on the Isthmus during the month. Hawsepipe castings for chain fender pits Nos. 812 and 813, Gatun, were placed in position, but will not be bolted to anchors until the machine is erected. All parts for the machine to be installed in pit No. 813 are at the site of pit in readiness for erection, with the exception of the plunger base and anchor bolts, which parts have delayed the starting of erection of the machine for this pit.

INSPECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection, as follows:

(1) *For the rising stem and cylindrical valve machines, motors, and limit switches for same, and auxiliary culvert valve machines, purchased under Circular No. 614*—Fifty-three rising stem gate valve machines have been shipped from the works of the contractors. Satisfactory delivery of the various groups, stated in the contracts as parts not required to be tested, is being made, but does not conform entirely to schedule.

Seventy-four cylindrical valve machines have been shipped from the works of the contractor. To date, 58 machines have been received on the Isthmus, in addition to the two trial machines.

Six auxiliary culvert valve machines have been received to date on the Isthmus.

Twenty motors for the rising stem gate valve machines have been received on the Isthmus, 16 for Gatun, and four for Pedro Miguel.

Shipment has been resumed, via Baltimore, of material manufactured by the contractors at Wheeling, W. Va. This material has, for the past few months, been shipped via New York on account of the strike on the docks at Baltimore.

(2) *For the gate and girder hoisting machinery for the emergency dams, purchased under Circular No. 616*—Test of the second girder hoisting machine was conducted during the month at the works of the contractor in the United States. The hand operating gear for this machine was also tested, as well as the reconnected motors and solenoids.

The motors for operating the mechanism for turning the emergency dam have been tested, and were found to comply with the requirements of the specifications in every respect. Shipping authority has been issued

for a large number of the motors, which are to be used in connection with the operation of the emergency dams.

(3) *For the rack railway and other material relative thereto, purchased under Circulars Nos. 619, 628, 635, 636-D, 647, 666, and 688*—Out of the 57 items of all of the above circulars, 52 items are 100 per cent completed, and satisfactory progress is being made on the delivery of the balance of the items.

(4) *For the gate operating machines, Class 1, and miter forcing machines, Class 2, and motors for same, Classes 3 and 4, purchased under Circular No. 627*—Tests of the two miter gate moving machines and one miter forcing machine were conducted during the month. These three machines were installed complete, although temporary control was used on all machines. Gates Nos. 37 and 38 were controlled from a common point on the center wall. It was determined that the gates were brought accurately to miter by the miter gate moving machines, and locked effectively by the miter forcing machine. Gate No. 37 was moved several inches from its miter position, and was forced home by the miter forcing machine against the resistance of the springs in the strut. The general operation of all machines was satisfactory.

Unsatisfactory progress is being made in the delivery of the various parts for the 90 miter gate moving machines. The foundation bolts, washers, and pipes for the 90 machines have been received complete.

Outline drawings of the miter gate moving machine motors were approved during the month, and it is expected that the manufacture of these motors will proceed rapidly.

(5) *For the equipment for the hydroelectric station, purchased under Circular No. 648*—The first turbine was dismantled at the shops of the contractor, and, after satisfactory inspection, was shipped, and is now on the Isthmus.

The first generator unit was assembled at the works of the contractor for test, as well as the second and third generator units.

The 30-ton traveling crane, Class 3, has been received on the Isthmus.

(6) *For electric towing locomotives, purchased under Circular No. 650*—The work is progressing slowly on the the first locomotive, owing to difficulty in obtaining satisfactory steel castings, and it is estimated that the contractor will be about one month behind in making delivery.

(7) *For the Spillway gate machines and pumps, purchased under Circular No. 661*—The contractors for the machines under this circular advise that the first machine would be ready for test the latter part of August.

(8) *For control apparatus for all locks, purchased under Circular No. 679*—The contractor is submitting drawings of apparatus to be furnished under this circular, but they are behind in this respect.

(9) *For motors, pumps, float switches, and starters, purchased under Circular No. 681*—Work has been commenced at the factory of the contractor on the manufacture of the two trial pumps for the chain fender machines. Drawings under this circular are being submitted by the different contractors.

(10) *For crossovers, purchased under Circular No. 688*—The first crossover was assembled at the works of the contractor, and, after examination, it appeared to be satisfactory. By the end of the month, four crossovers had been received on the Isthmus.

(11) For cable designated in Circular No. 695—No cable was received on the Isthmus during the month.

ATLANTIC DIVISION LOCKS.

During the month, 1,140.6 cubic yards of concrete were placed; amount previously reported was 2,749.4 cubic yards, bringing the total to date to 3,889.9 cubic yards.

Temporary lighting was placed in various valve machinery chambers, operating tunnels, etc.

Bonding, cross-bonding, and bonding around gate pintles is 98 per cent completed for the track installed. Five hundred and ten feet of steel conductor rail were laid on the east wall return track, and necessary brackets and insulators installed. Two hundred and twenty feet of copper conductor rail were laid on east wall towing track, and necessary brackets and insulators installed.

PACIFIC DIVISION LOCKS.

During the month, 898.7 cubic yards of concrete were placed; amount previously placed was 479.8 cubic yards, bringing the total to date to 1,378.5 cubic yards. In addition to the above, 112.72 cubic yards of mortar were placed during the month.

Six hundred feet of supporting I-beams have been placed, and 400 feet of return track have been laid on these I-beams.

EMERGENCY DAMS.

At the mills, the following material was manufactured during the month: Nickel steel, 380 tons; structural carbon steel, 198 tons; turning and wedging machinery, 55.2 tons.

At the shops, the following material was fabricated during the month: Nickel steel, 650 tons; structural carbon steel, 100 tons; turning and wedging machinery, 80.6 tons.

The roller bearings for the gates and yokes for one dam were fitted in place, the tests required prior to acceptance were made, and the bearings found satisfactory.

The condition of the work for each dam is, as follows:

Gatun, east dam—Nickel steel, 100 per cent completed and shipped; structural carbon steel, with exception of gates, 100 per cent completed and shipped; gates, 100 per cent completed, and 80 per cent shipped; turning and wedging machinery, 100 per cent completed, and 90 per cent shipped.

West dam—Nickel steel, 100 per cent completed and shipped; structural carbon steel, with exception of gates, 100 per cent completed and shipped; gates, 98 per cent completed; turning and wedging machinery, 100 per cent completed, and 90 per cent shipped.

Pedro Miguel, east dam—Nickel steel, 99 per cent rolled, 80 per cent punched, 75 per cent assembled, 50 per cent riveted, and 45 per cent finished; structural carbon steel, including gates, 99 per cent rolled; turning and wedging machinery, 100 per cent completed in foundries, and 50 per cent completed in shops.

West dam—Nickel steel, 99 per cent rolled, 98 per cent punched, 80 per cent assembled, 65 per cent riveted, and 60 per cent finished; structural carbon steel, including gates, 99 per cent rolled; gates, seven per cent completed; turning and wedging machinery, 100 per cent completed in foundries, and 50 per cent completed in shops.

Miraflores, east dam—Nickel steel, 75 per cent rolled; structural carbon steel, 85 per

cent rolled; turning and wedging machinery, 30 per cent completed in foundries.

West dam—The condition of the work for this dam is the same as that for the east dam at Miraflores.

INSPECTION ON THE ISTHMUS.

Gatun, east dam—Material delivered at site of dam, 1,824 tons. All wicket girders, rack and track segments for turning quadrant, part of bottom chord of long arm, and compression chord of horizontal truss, have been placed in temporary position. All wedge seats for short arm of dam, center casting, center pivot (including upper, center, and lower discs, and upper center casting,) have been set in permanent position. Longitudinal and transverse center girders, both bottom chords of short arm, and trailing wheels at center (including their structural supports,) have been bolted together ready for riveting. The total tonnage of material placed in permanent position, and that bolted together ready for riveting, is 365 tons.

Gatun, west dam—Material delivered at site of dam, 1,371 tons.

AIDS TO NAVIGATION.

Construction—Range No. 3-4 (old number 9-11,) Pacific Division—Both towers are completed, with the exception of hanging steel lantern door, painting towers, and installing permanent lights.

Range No. 12-13 (old number 1-2,) Pacific Division—Front tower, foundation is completed and temporary frame tower has been erected thereon. Rear tower, completed, except the steel lantern door must be hung, tower painted, and light installed.

Range 1-2 (old number 13-14,) Pacific Division—Both towers are completed, except that stair railing must be erected, steel lantern doors hung, towers painted, and permanent lights installed.

Range No. 5-6, Atlantic Division—Both towers are completed, with the exception of erecting stair railing, hanging steel lantern doors, painting towers, and installing permanent lights.

Range No. 21-22, Gatun Lake section—Front tower completed, except that door must be hung, steel ladder erected, lantern glass set in place, tower painted, and light installed. No work has as yet been done on the rear tower of this range.

Range No. 24-25, Gatun Lake section—Both towers are completed, except that steel lantern doors must be hung, towers painted, and lights installed. The stair railing must also be erected in rear tower.

Range No. 1-2, Gatun Lake section—Front tower is completed, except that stair railing must be erected, steel lantern door hung, and tower painted. *Rear tower*—This tower is located on the rock fill in the rear of the north end of the west wall of the upper locks at Gatun. In order to secure a good foundation for the reinforced tower, the focal plane of which will be at 82 feet four inches above the lock walls, it is necessary to go down to rock. A cylindrical reinforced concrete caisson foundation, 18 feet external diameter, and 15 feet six inches internal diameter, is, therefore, being sunk. The site of the tower was leveled off at elevation plus 81, and the first section of the caisson, six feet in height, was cast and sunk. Another six feet of cylinder was cast in place, and the whole gradually sunk. This process is repeated every six feet. At the end of the month, 24 feet of cylinder had been

cast in place and sunk to plus 62. The concrete in the cylinder amounted to 63.6 cubic yards. The excavation, not including the preliminary leveling off, amounted to 184 cubic yards. At present, the caisson is being sunk at the rate of 12 feet every six days.

Range No. 5-6, Gatun Lake section—The reinforced foundation for the front tower, 20 feet in diameter and 24 feet high, was completed, and the tower was finished, except that the vestibule must be constructed, the steel ladder erected, the lantern glass set in place, tower painted, and the light installed.

Range No. 3-4, Gatun Lake section—The site for the front tower was selected and leveled off. Practically all of the material had been delivered at the site and the foundation slab was in place. The front section, four feet high, of the forms for the submarine foundation was in place. The construction party is quartered in camp at this station.

Beacon No. 5, Pacific Division—Five concrete bearing piles were driven to refusal.

Beacon No. 7, Pacific Division—Five concrete bearing piles, 35 feet long, were driven to refusal and capped with a concrete slab. The reinforced concrete caisson, forming the base of the beacon, was towed to the site and sunk in place. The steel skeleton frame tower was erected, and the steel members were encased in concrete up to and including the watchroom floor.

Beacon No. 8, Pacific Division—Five concrete bearing piles, 30 feet long, were driven to refusal and capped with a reinforced concrete slab in the shape of a cross.

General plant of lighthouse subdivision at Balboa—The following reinforced concrete material was cast during the month: Fifty-two reinforced concrete stair treads, eight stair stringers, four 48-inch by 48-inch gas buoy sinkers, and five 24-inch by 24-inch spar buoy sinkers.

West breakwater light, Limon Bay—The reinforced concrete caisson, 46 feet by 46 feet, was completed at Mindi powder dock up to a height of 25 feet; the outside forms were stripped off, and on August 6, it was towed out into Limon Bay and sunk in 20 feet of water. It will remain there until the riprap foundation at the outer end of the west breakwater is completed.

Surveys—To obtain better locations for the rear towers of Ranges Nos. 11-12 and 21-22, the tangents of both ranges were prolonged and suitable locations found. Gas buoy No. 37 was located at Bohio and referenced.

Atlantic Division.

GATUN LOCKS.

Excavation—During the month, the excavation for the locks backfill and construction tracks amounted to 105,954 cubic yards.

Backfill—Backfilling behind the side and center walls of the locks was continued. The quantity placed during the month aggregated 108,819 cubic yards. The total placed to September 1, amounted to 1,775,664 cubic yards.

Receiving and issuing material—The issues of sand exceeded the receipts by 1,086 cubic yards; the receipts of cement exceeded the consumption by 2,323 barrels; the issues of rock amounted to 6,352 cubic yards, no rock being received.

Mixing and placing plants—Plant No. 1, and the portable mixers, were kept in satisfactory operation during the month.

Concrete work—There was a decrease of 1,237.5 cubic yards in the amount of concrete

laid, as compared with the figures for the preceding month. The daily average for the 27 working days was 254 cubic yards, as compared with a daily average of 311 cubic yards during July. The total amount of concrete placed during the month was 6,855 cubic yards. The bucket measurement exceeded the place measurement by 111 cubic yards. Of the total, 3,763 cubic yards were placed in the upper lock, 1,474½ cubic yards in the middle lock, and 1,617½ cubic yards in the lower lock. The concrete work for the entire lock system was 94.50 per cent completed on September 1.

OPERATION OF THE PERMANENT CONCRETE CONSTRUCTION PLANTS.

Length of working day (hours).....	9.00
Average number of hours per day worked, per strand of cableway laying concrete (actual working time).....	.42
Average number of mixers per day.....	2.00
Average hourly output per mixer (actual working time) cubic yards.....	41.87
Average amount of concrete laid per hour, per strand of cableway (actual working time) cubic yards.....	23.74
Concrete laid (cubic yards) cableways.....	3,612.00
Concrete laid (cubic yards) derricks.....	3,354.00
Concrete laid (cubic yards) portable mixers.....	41.00

Total amount of concrete laid (cubic yards) 7,007.00

GATUN DAM.

Construction during the month increased the total fill, as determined by cross section of the material in place, by 244,618 cubic yards, making the total amount in place 20,235,385 cubic yards. On September 1, the Dam was 92.2 per cent completed.

Hydraulic fill—The dredges increased the hydraulic fill by 43,589 cubic yards, making the total hydraulic fill in place August 31, 10,061,416 cubic yards.

Dry fill—The material received from the steamshovels, amounting to 201,029 cubic yards, was placed on the north and south toes of the Dam, east and west of the Spillway, making the total dry fill in place 10,173,969 cubic yards.

GATUN SPILLWAY.

Hydroelectric plant—During the month, 1,974 cubic yards of rock were removed by crane in preparing foundations for the hydroelectric plant, increasing the total excavation for this purpose to 92,849 cubic yards.

Concrete—The work of placing concrete was continued, the amount placed during the month aggregating 1,223 cubic yards. The concrete work for the Spillway was 91.10 per cent completed.

Backfill—There was no backfilling done during the month, the total remaining at 16,495 cubic yards.

Excavation—There was no excavating done during the month, the total remaining at 1,591,086 cubic yards.

HARBOR AND CHANNEL SECTION.

Dredging from the ocean to Mindi—Four dredges removed 377,718 cubic yards of earth, and 51,697 cubic yards of rock, from the Canal prism. In addition, the dredge *Mindi* removed 48,552 cubic yards of coral rock from the slip between Docks 16 and 17, Panama Railroad Company's Cristobal terminal docks. On August 31st, 40 feet of water could be carried from zero to zero plus 2,100 feet, 35 feet to mile post 4 plus 3,500 feet, 30 feet to mile post 5 plus 2,000 feet, 20 feet to mile post 6 plus 1,900 feet.

Approach to Gatun Locks—Two dredges removed 69,098 cubic yards of earth, and 15,460 cubic yards of rock, from the Canal prism.

PORTO BELLO.

During the month, 9,556 cubic yards of rock

were shipped to Toro Point for use in construction of the breakwater.

ROCK TRANSPORTATION SERVICE.

In connection with this service, plant steamed 2,056 miles, handled 109 barges, and carried 1,115 passengers.

WEST BREAKWATER, COLON.

During the month, the single track trestle was extended 120 lineal feet. On September 1, the trestle extended 11,267 lineal feet from shore. Nine thousand three hundred and thirty-two cubic yards of Porto Bello rock were unloaded, making the total to September 1st, 83,143 cubic yards.

MUNICIPAL ENGINEERING.

The reservoirs, water mains, sewers, roads, and oil pipe lines were maintained and extended as required to facilitate construction work.

Work was continued on the Colon street improvements.

Central Division.

During the month of August, the total amount of material excavated by the Central Division was 1,094,132 cubic yards, of which 197,597 cubic yards were classified as earth and 896,535 cubic yards as rock. The total of 1,094,132 cubic yards was removed by steamshovels. Of the total, 1,067,300 cubic yards consisted of primary excavation from the Canal prism, and 26,832 cubic yards were removed from the Obispo Diversion.

The daily average number of steamshovels at work during the month was 34.11, and the total number of shovel days was 921, as compared with 38.71 at work during the month of July, with 1,006½ shovel days.

For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W. Kg. days.	Av. yards per shovel per day.
		Rock.	Earth.			
1911:	Cu. Yds.	Cu. Yds.	Cu. Yds.			C. Y.
Aug.	1,442,402	1,262,309	173,093	40.66	27	1,316.66
1912:						
Aug.	1,094,132	896,535	197,597	34.11	27	1,187.98

Rainfall at Empire: 1911, 5.98 ins.; 1912, 10.53 ins.

The above table shows the average output per shovel to be 9.57 per cent less than in August, 1911.

The total amount of material excavated from the Culebra section of the Central Division in August, 1912—1,094,132 cubic yards—was the lowest record in that section for the month of August, since August, 1907, when only 786,866 cubic yards were removed.

The total estimated amount of material (dry excavation) to be removed in the Central Division, according to revised estimate of July 1, 1912, was 106,116,221 cubic yards; and, up to September 1, 1912, 96,832,179 cubic yards had been removed, leaving 9,284,042 cubic yards to be removed, in order to complete all dry excavation in the Central Division. From these figures, it will be seen that 91.25 per cent of all excavation in the Central Division had been accomplished up to the close of the month of August, and the amount to be removed was 8.75 per cent.

Considering the two sections which compose the Central Division, the excavation completed, and that yet to be completed, at the close of August operations was, as follows:

CULEBRA SECTION.		Cu. Yds.
Completed.....	84,447,524	
To be completed.....	9,284,042	
CHAGRES SECTION.		Cu. Yds.
Completed.....	12,384,655	

From the above figures, it will be seen that

the Culebra section, locally known as "Culebra Cut" is 90.09 per cent completed, with 9.91 per cent to be completed. The Chagres section is completed so far as dry excavation is concerned, but it is estimated that about 300,000 cubic yards of wet excavation will have to be removed in this section.

During the month, 49,095 cubic yards of material were dumped in the embankment for the new roadbed of the relocation of the Panama railroad, increasing the total amount used for this purpose to 4,358,092 cubic yards.

During the month, no material was furnished to the Atlantic Division for use in the construction of the Gatun Dam, the total amount remaining at 5,374,310 cubic yards.

There were furnished during the month to the Panama railroad, 7,367 cubic yards of material for the terminals in Colon.

The daily average number of laborers at work on the whole division during the month was 5,935, while the daily average number of gold employes was 585.

Pacific Division.

DISTRICT NO. 1—LOCKS, DAMS, AND DRY EXCAVATION.

Excavation—The total excavation during the month amounted to 195,556 cubic yards, of which 91,868 cubic yards were classified as earth and 103,688 cubic yards as rock.

Filling and embankment—During the month of August, 12,481 cubic yards of dry filling were added to the prism of the Pedro Miguel west dam, increasing the total amount of material in place at the end of the month to 611,072 cubic yards. The backfill at Pedro Miguel was increased by 25,301 cubic yards, the total quantity in place at the close of the month being 693,426 cubic yards.

At Miraflores, the dry filling in the toes of the west dam, was increased by 45,140 cubic yards, making the total quantities of dry and hydraulic filling in place at the end of the month, 1,324,584 cubic yards, and 661,048 cubic yards, respectively. The backfill at Miraflores was increased by 78,689 cubic yards, increasing the total amount in place at the end of the month to 783,263 cubic yards.

Pedro Miguel Lock—During the month, excavation was continued in the Canal prism, south of Pedro Miguel lock, in the vicinity of the guide wall extension. Two steamshovels were engaged in this work, and the spoil was used principally for the topping of the west dam, and for filling the middle of the lower guide wall. One steamshovel continued the excavation for the northwest wing wall. The amount of iron placed in the masonry aggregated 84,296 pounds.

OPERATION OF THE AUXILIARY CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours).....	8.00
Average number of hours per day worked laying concrete and large stone (actual working time).....	6.11
Average number of mixers per day.....	4.44
Average hourly output per mixer (actual working time) cubic yards.....	8.38
Large stone laid, cubic yards.....	
Concrete laid, cubic yards.....	6,413.00
Total concrete laid, cubic yards.....	6,413.00

Mixing plant consisted of one 2-cubic yard mixer, daily average number 0.63, and a daily average of 3.82 one-half cubic yard mixers. Placing plant consisted of a daily average of 3.82 one-half cubic yard mixers discharging directly into forms, and a daily average of 0.82 locomotive cranes or derricks.

Concrete work—The total amount of concrete and large stone laid at Pedro Miguel was 6,413 cubic yards, as compared with 11,959 cubic yards during July. The concrete was placed, as follows: Two thousand five hun-

dred and fourteen cubic yards in the north-east wing wall, 398 cubic yards in the north-west wing wall, 591 cubic yards in the east wall, 133 cubic yards in the center wall, 321 cubic yards in the west wall, 765 cubic yards in the floors, 914 cubic yards in the southeast wing wall, 234 cubic yards in south center guide wall, 69 cubic yards around ducts in operating tunnel "A," 56 cubic yards around ducts in operating tunnel "C," and 418 cubic yards in northwest core wall.

Miraflores Locks—Dry excavation, principally in the Canal prism, south of the locks, was continued with eight steamshovels, the spoil being used for backfilling behind the east and west lock walls, for filling the west dam, and for filling swamps. Two pioneer cuts are being made, one on the east, and one on the west side of the Canal prism, through the high ground separating the present steamshovel and hydraulic excavation areas, with the view of expanding the congested steamshovel area to the south. New spoil dumps are being opened up in the swamp area east of the present dike across the Canal, to take care of the output of the proposed increase in steamshovel equipment. The construction of the north approach wall and northeast wing wall was continued. Creosoted piles are being driven for the foundation of the northwest wing wall. The amount of iron placed in the masonry amounted to 825,613 pounds.

Concrete work—The total amount of concrete and large stone laid at Miraflores was 75,388 cubic yards, as compared with 66,076 cubic yards during July. The concrete was placed, as follows: Six hundred and thirty-eight cubic yards in northeast wing wall, 5,378 cubic yards in north center guide wall, 9,093 cubic yards in east wall, 40,210 cubic yards in center wall, 12,615 cubic yards in west wall, 1,059 cubic yards in floors, 1,386 cubic yards in southeast wing wall, 4,866 cubic yards in south center guide wall, 143 cubic yards around ducts, 93 cubic yards of which were placed in operating tunnel "A," and 50 cubic yards in operating tunnel "C."

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)...	8 & 12.00	8 & 12.00
Average number of hours per day laying concrete and large stone (actual working time).....	6.09	6.30
Average number of mixers per day	7.00	8.04
Average hourly output per mixer (actual working time) cubic yards.....	30.77	28.67
Average amount of concrete and large stone laid per hour per berm or chamber crane, (actual working time) cubic yards.....	53.57	.....
Large stone laid.....		
Concrete laid (cubic yards).....	57,758.00	17,630.00
Total concrete laid (cubic yards)	57,758.00	17,630.00

Four chamber cranes, two berm cranes, and two 2-cubic yard auxiliary concrete mixers worked twelve hours a day. Permanent plant consisted of four berm cranes and four chamber cranes. Auxiliary plant consisted of a daily average of two 2-cubic yard mixers, and a daily average of 6.04 one-half cubic yard mixers. Output of two-cubic yard mixers was placed by chamber cranes; output of one-half cubic yard mixers was discharged directly into forms, or placed by locomotive cranes or derricks, of which there was an average of 2.7 per day.

DISTRICT NO. 2—DREDGING, BALBOA SHOPS, AND SHIPWAYS.

The following is a statement of the output of the six dredges, which were in

operation during the month, and the amount of material excavated hydraulically:

DREDGE.	Type.	WORK.		PLANT.		Total.	Remarks.
		Earth.	Rock.	Earth.	Rock.		
		Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	
Cardenas.....	Dipper.....	17.150	17.150			17.150	Place measurement
Corozal.....	Ladder.....	52.739	52.738			105.477	Place measurement
Marmot.....	Ladder.....	39.955	2.675			42.630	Place measurement
Badger.....	Ladder.....	131.111				131.111	Place measurement
Mole.....	Ladder.....	9.856	2.800			12.156	Scow measurement
Culebra.....	Suction.....	189.200				189.200	Scow measurement
Total.....		422.861	74.563			497.724	
Hydraulic excavation.....		75.031*				75.031	Place measurement
Grand total.....		497.892	74.563			572.755	

*Excavated from Canal prism, south of Miraflores lock site.

CHAMÉ SAND EXCAVATION.

Approximately 49,111 cubic yards of sand were excavated at Punta Chamé and delivered at Balboa sand bins.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

The reservoirs, water mains, sewers, and oil pipe lines were maintained and extended as required to facilitate construction work.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.	
Length of working day (hours).....	8.00
Average number of hours per day (actual working time).....	7.83
Average number of cubic yards crushed per hour per working day.....	289.63
Average number of cubic yards crushed per working hour.....	333.05
Total output for the month (cubic yards)...	70,383.00

Quartermaster's Department.

Labor—The shortage in unskilled labor at 10 cents an hour continued.

Buildings—Twelve buildings at Balboa were demolished during the month, and the work of moving and reerecting buildings at Ancon was completed. Work on the addition to the dining room and ballroom of the Hotel Tivoli was commenced. Two laborers' barracks have been moved from Gorgona and are being reerected at Corozal. Two Type-14 houses, which are in the slide area at Culebra, are being demolished, and will be reerected at Corozal. One Type-18 house is to be taken down at Bas Obispo and also reerected at Corozal. The Commission clubhouse at Culebra is being demolished on account of being included in the slide area.

Quarters—The increase of force on the Pacific end of the Canal has taxed the capacity of the quarters in the districts of Ancon, Corozal, and Pedro Miguel. With the houses now being moved and reerected, additional quarters will be provided for 136 additional gold bachelor employees.

Material and supplies—The value of material received during the month was \$1,113,701.57. Supplies were delivered by 34 steamers, the total weight of cargo, exclusive of lumber, piling, and ties, being 28,383 tons.

Subsistence Department.

The operation of the European laborers' messes, colored laborers' kitchens, and line hotels, showed a net profit of \$4,732.47. The operation of the Hotel Tivoli showed a net loss of \$1,513.16, and there was a net loss on penitentiary restaurants, tugs, and dredges of \$1.41. The net profit on subsistence operations was \$3,217.90.

Department of Civil Administration.

COURTS.

During the month, one civil case was disposed of in the Supreme Court, 91 civil and 46 criminal cases in the Circuit Courts, and 35 civil and 516 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES.

Money order sales for August amounted to

\$365,073.51, and the fees to \$1,703.92. Receipts from stamp and card sales, and news-

paper postage, aggregated \$7,992.02. The total collection of revenues made by the division was \$18,821.63, and the collection on account of court fines, costs, and fees, \$2,393.19.

Twenty-five vessels entered at, and a like number cleared from the port of Ancon; and 15 vessels entered at, and 18 cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 522, of whom 466 were men and 56 women. Twenty-four nations, or 41 separate states and dependencies were represented. The total number of arrests for the month was a increase of 45, as compared with the month of July. Twelve convicts were committed to the penitentiary, and 10 were discharged, leaving 137 convicts in confinement at the close of the month. The cost of guarding and subsisting the convicts was \$2,683.75, and the value of their work on Canal Zone roads was \$2,468.95.

DIVISION OF FIRE PROTECTION.

Three fires were reported in the Canal Zone during the month. The damage to private property was \$65.

DIVISION OF PUBLIC WORKS.

In the city of Panama, the average daily consumption of water was 1,710,209 gallons, and in Colon, 1,325,784 gallons. The usual inspection and maintenance work in this division was performed during the month.

DIVISION OF SCHOOLS.

The schools were not in session during the month.

Department of Sanitation.

The total number of deaths from all causes among employes was 42. These were divided, as follows. From disease, 32; from violence, 10, giving the annual average per thousand of 7.63 and 2.38, respectively, on the basis of the number of employes estimated by the Department of Sanitation. The annual average death rate per thousand among employes for the month of August, 1911, was 9.17.

The annual average death rate per thousand in the Canal Zone, and in the cities of Colon and Panama, including both employes and nonemployes, was 25.69. This rate is based upon a population in the Canal Zone of 62,810, according to the census of February, 1912, and a population in Panama and Colon of 47,172, and 20,232, respectively, as estimated by the Department of Sanitation. The annual average death rate per thousand among the same classes of population for the month of August, 1911, was 20.31.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was: For whites, 6.91; blacks, 7.86, giving a general average for disease of 7.63. For the same month during 1910, the annual average death rate per

thousand from disease among whites was 5.28; blacks, 8.11, giving a general average of 7.35; and for the same month during 1911, whites, 6.45; blacks, 6.23, giving a general average of 6.27.

Among employes during the month, deaths from the principal diseases were, as follows: Hæmoglobinuric fever, one; lobar pneumonia, nine; malaria fever, E. A., one; tuberculosis, eight, leaving 13 deaths from all other diseases, and 10 deaths from external violence.

No cases of yellow fever, smallpox, or plague originated on, or were brought to the Isthmus during the month.

Respectfully,
GEO. W. GOETHALS, *Chairman.*

PERSONAL.

Capt. Courtland Nixon sailed for New York on the *Colon*, on Sunday, September 15, on his annual leave of absence.

Capt. Frank. O Whitlock, accompanied by his family, sailed for the United States on the *Ancon*, on Thursday, September 12, on annual leave.

Civil Service Examinations.

Examination will be held, probably on October 27, for the positions of stenographer and typewriter, Isthmian Canal Service; stenographer and typewriter, Philippine Service; and typewriter, Isthmian Canal Service.

Persons interested should request a copy of Form 1424, which contains information in regard to the above named examinations.

Applications will not be received after October 2; this date may be changed if necessary.

Competitors in the above named examinations must bring their own typewriting machines to the examination room.

It is to be noted that in answer to questions as to residence, applicants must show such residence in a State or Territory of the United States, and county thereof, up to the time of filing application.

ISTHMIAN CIVIL SERVICE BOARD.
Culebra, C. Z., September 14, 1912.

Canal Zone Postal Savings Bank Transactions.

A statement of Canal Zone postal savings bank transactions at Canal Zone post-offices, for the month of August, follows:

NAME OF OFFICE.	Postal Savings Certificates Issued.	Postal Savings Certificates Paid.
Ancon.....	6,775.00	4,776.00
Balboa.....	8,806.00	7,521.00
Bas Obispo.....	645.00	535.00
Corozal.....	12,879.00	10,843.00
Cristobal.....	7,541.00	8,889.00
Culebra.....	9,850.00	9,051.00
Empire.....	5,256.00	4,812.00
Gatun.....	10,056.00	8,646.00
Gorgona.....	16,455.00	12,549.00
Las Cascadas.....	5,137.00	6,224.00
Matachin.....	706.00	209.00
Miraflores.....	4,818.00	2,956.00
Paraiso.....	6,368.00	3,890.00
Pedro Miguel.....	15,383.00	11,085.00
Cristobal, Sta. A.....	395.00	210.00
Cristobal, Sta. B.....	734.00	279.00
Total.....	\$111,804.00	\$92,475.00

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, and engineers; and for chauffeurs, will be held by the Board of Local Inspectors, at the Administration Building, Ancon, on Wednesday, September 25, 1912, at 8 a. m. All applicants for licenses as chauffeurs must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and

information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8 a. m., on September 25, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their ability to properly operate an automobile, and must have the automobile with them.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending September 14:

DATE.	Hours worked.	Cubic Yard.
September 9.....	7 55	2,480
September 10.....	8 30	3,354
September 11.....	7 35	2,724
September 12.....	6 55	2,915
September 13.....	5 40	1,665
September 14.....		398
Total.....	36 35	13,536

Obituary.

Edward Ray, an employe of the McClintic-Marshall Construction Company at Gatun, died in Colon Hospital on September 13. He was 40 years of age, single, and had been on the Isthmus 19 months, coming here from Ohio.

Killed in Fall from Lock Wall.

Lawrence B. Fay, an assistant engineer in the First Division, fell from the upper east wall of Gatun Locks, onto the floor of the east chamber of the middle lock, a distance of about 105 feet, at 9.45 a. m., on Tuesday, September 17, causing, among other injuries, a compound fracture of the skull, from which death resulted almost instantly. It is believed that while standing on the lock wall, he was seized with a spell of vertigo, or dizziness. He was 28 years old, single, and had been on the Isthmus since January 5, 1911. His home was in Washington, D. C.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 91 per cent completed, 205,697 cubic yards, out of a total of 225,000, having been placed at the close of work on September 14. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid	Hours worked.	No. Mixers.
	<i>Cu. Yds.</i>		
September 9.....	11	1.50	1
September 10.....	16	1.75	1
September 11.....			
September 12.....	24	1.50	1
September 13.....	68	5.00	1
September 14.....	280	16.00	2
Total.....	399	25.75	1.20
Previously reported...	205,298		
Grand total.....	205,697		

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Paraiso, C. Z., Sunday, September 22, at 2 p. m. The program follows:

1. March—*Vesuvius*.....Kane
2. Selection—*The Red Widow*.....Gebest
3. Waltz—*Tres Julie*.....Wal Henfel
4. Overture—*It I Were King*.....Adam
5. Popular number.....Selected
6. The Broadway Review.....Lampe
(Extracts from the latest Broadway hits.)
7. Medley of popular songs.....Von Tilzer
8. Grand fantasia—*Home, Sweet Home, the
World Around*.....Lampe
9. March—*The Cavalier*.....S. P. Harris

CHARLES E. JENNINGS, *Musical Director.*
The next concert will be given at Hotel Tivoli, September 29.

GATUN LAKE WATER SUPPLY.

Effects of Dry Seasons on Quantity of Water in Storage.

The past dry season, January 1 to April 30, 1912, was the driest observed in the last 22 years (1890 to 1912,) the average discharge of the Gatun lake watershed being 795 cubic feet per second, whereas the average discharge during the previous record dry season was 1,191 cubic feet per second.

The following tabulation shows the maximum and minimum discharge at Gatun during the last 22 years, and also the average discharge during the same period.

DISCHARGE BY RIVER, YEARS MAY 1 TO APRIL 30, IN CUBIC FEET PER SECOND.

Wet season (May to December,) eight months, and dry season (January to April,) four months.

PERIOD.	1905 -06	1907 -08	1909 -10	1911 -12	22 years
Eight wet months.....	6,017	7,421	13,971	6,556	9,655
Four dry months.....	1,542	1,191	6,518	795	3,074
River year.....	4,526	5,344	11,486	4,636	7,462

The figures in black face type indicate maximum or minimum discharge.

The record dry season of 1912 is of interest, mainly, on account of the effect a similar dry season, occurring after the opening of the Canal, would have on the lockage capacity of the Canal, without lowering the lake surface sufficient to limit the draft of vessels through the lake section and the Culebra Cut.

The discharge, or net yield, of the Gatun watershed during the past dry season is very different from what the net yield would be with Gatun Lake completely filled, the net yield in the latter case being the run-off from the land area, plus the rainfall on the lake surface, less unavoidable losses, such as evaporation from lake, 1,000 cubic feet per second, leakage at gates and valves, 275 cubic feet per second, seepage through the lake bottom, 85 cubic feet per second, and the amount used by the hydroelectric plant, 275 cubic feet per second.

These two conditions are shown in the following table, giving the monthly yield of the watershed from December to May, inclusive:

GATUN WATERSHED.

Monthly net yield in cubic feet per second, based on records of December, 1911 to May, 1912.

	De- cem- ber	Janu- ary	Feb- ruary	March	April	May
Without lake.....	4,042	1,351	992	482	350	2,692
With lake filled.....	1,400	-550	-363	-1,190	-1,002	2,450

In the above table it may be noticed that the net yield, with the lake is a minus quantity from January to April, the aggregate losses from the lake in these months being greater than the inflow.

Assuming that Gatun Lake was at elevation plus 87 on December 1, and that the hydroelectric plant was in continuous operation, and that 48 lockages a day were being made, the level of the lake would be reduced to its lowest point (plus 79.5,) on May 7, after which it would continuously rise. If the hydroelectric plant was not operated during the entire dry season, the lowest point reached would be plus 80.3. With the water at plus 79 in Gatun Lake, there would be 39 feet of water in the Culebra Cut, which would be ample for navigation.

It is estimated that 48 is the greatest number of lockages which could be made in 24 hours, and that this is the limiting capacity of the Panama Canal.

PANAMA TREES AND PLANTS.

List and Names of Those Grown in Ancon Hospital Grounds.

An article on the plants and trees grown in Ancon Hospital gardens was published in THE CANAL RECORD on July 31 (No. 49, vol. 5.) As there occurred in this list numerous typographical errors, a revised and corrected list, arranged alphabetically, is here subjoined:

Acacia Farnesiana.....	Flor de Aromo.
Acalypha mosata.....	Chenille plant.
Acalypha Sanderi.....	Chenille plant.
Achras ingeto.....	Mamey zapote.
Achras mamosa.....	Sapodilla.
Achras sapota.....	Sapodilla.
Acrocomia sclerocarpa.....	Wine palm.
Actinorhynchus calloparia.....	Century plant.
Agave Americana.....	Century plant.
Alibertia edulis.....	Madroño de comer.
Allamanda cathartica.....	Madroño de comer.
Aniaryllis (Hippeastrum) equestre.....	Madroño de comer.
Anacardium occidentale.....	Cashew.
Anacardium rhinocarpus.....	Espavé.
Andira inermis.....	Cabbage tree.
Anona muricata.....	Sour-sop.
Anona palustris.....	Sour-sop.
Anona reticulata.....	Sour-sop.
Anona squamosa.....	Sugar apple.
Antigonon leptopus.....	Coral vine.
Apeiba Tibourbou.....	Corteza.
Aralia Guilloylei.....	Corteza.
Araucaria excelsa.....	Norfolk Island pine.
Arenga saccharifera.....	Sugar palm.
Aristotelia macqui.....	Jack fruit.
Artocarpus integrifolia.....	Jack fruit.
Artocarpus Incisa.....	Bread fruit.
Astrocaryum polystachium (Coyolillo).....	Bread fruit.
Attalea gomphococca.....	Palma real.
Bambusa argentea.....	Japanese bamboo.
Bambusa arundinacea.....	Japanese bamboo.
Bauhinia purpurea.....	Flamboyant Blanco.
Bixa orellana.....	Anatto.
Blighia sapida.....	Aqui.
Botor tetragonoloba.....	Seguidilla.
Bryophyllum calycinum.....	Leaf of life.
Butea frondosa.....	Bastard teak.
Bunchosia glauca.....	Cerizo.
Byrsonima crassifolia.....	Nance.
Caesalpinia pulcherrima.....	Dwarf poinciana.
Catsea zanzibariensis.....	Coitee.
Cajanus indicus.....	Pigeon pea.
Caladium.....	Palo Maria.
Calophyllum calaba.....	Palo Maria.
Calophyllum kunsteri longuolum.....	Palo Maria.
Calycophyllum candidissimum.....	Alazano.
Camphora.....	Camphor.
Canna.....	Papaya.
Carica papaya.....	Papaya.
Carludovicia palmata.....	Panama hat palm.
Caryophyllus malaccensis.....	Large rose apple.
Caryota urens.....	Fern palm.
Cassia leiantha.....	Cañahstola.
Castilla panamensis.....	Native rubber of Panama.
Casuarina equisetifolia.....	Australian pine.
Catha edulis.....	Khat.
Cavanillesia platanifolia.....	Snake wood.
Cecropia palmata.....	Snake wood.
Cedrela odorata.....	Jamaica cedar.
Chlorophora tinctoria.....	Fustic.
Chrysophyllum Cainito.....	Star apple.
Cicca disticha.....	Tahiti gooseberry.
Citrus Acidia.....	Lime.
Citrus Aurantium Dulcis.....	Sweet orange.
Citrus Dancy (Nobilis).....	Tangerine orange.
Citrus decumana.....	Pumelo. Grape-fruit.
Citrus limonum.....	Lemon.
Clerodendron Balfouri.....	Blue pea.
Clitoria ternatea.....	Blue pea.
Cochlospermum hibiscoides.....	Poroporo.
Cocos nucifera.....	Cocoanut.
Coccoloba uvifera.....	Grape tree.
Codiaeum variegatum.....	Crotons.
Coleus.....	Taro.
Cola Acuminata.....	Cola.
Colocasia esculentum.....	Taro.
Cordia Gerascanthus.....	Laurel.
Cornutia pyramidata.....	Calabash.
Crescentia cujete.....	Calabash.
Crinum erubescens.....	Job's tears.
Coix lacryma-jobi.....	Job's tears.
Croton panamensis.....	Sangrillo.
Cycas revoluta.....	Sago palm.
Cycas circinalis.....	Sago palm.
Cytherexylum caudatum.....	Sago palm.
Cuscuta.....	Royal Poinciana.
Delonix regia.....	Royal Poinciana.
Didymopanax morototoni.....	Pavilla.
Dioscorea alata.....	Yam.
Diphysa robinoides.....	Macano.
Dracaena Linden.....	Dragon tree.
Duranta Plumieri.....	Dragon tree.
Elaeis melancocca.....	Oil palm.
Enterolobium cyclocarpum.....	Corotu.

Eriobotrya japonica.....	Loquat.
Erythrina sp.....	Loquat.
Erythrina corallodendron.....	Pito.
Eucalyptus botryoides.....	Rose apple.
Eugenia Jambos.....	"Surinam cherry."
Eugenia uniflora.....	Poinsettia.
Euphorbia pulcherrima.....	Poinsettia.
Feijoa sellowiana.....	Rubber tree.
Ficus elastica.....	India rubber.
Ficus Indica.....	Cluster fig.
Ficus sp.....	Edible fig.
Ficus carica.....	Edible fig.
Ficus altissima.....	Edible fig.
Furcraea.....	Pimbe.
Garcinia livingstonei.....	Mangosteen.
Garcinia mangostana.....	Mangosteen.
Garcinia morella.....	Cape Jessamine.
Garcinia xanthochyma.....	Cape Jessamine.
Garcinia Florida.....	Jagua.
Genipa caruto.....	Cacho de venado.
Gilbertia arborea.....	Bougainvillea.
Glabra Bougainvillea.....	Bougainvillea.
Glichenia.....	Fern sp.
Gliciridia maculata.....	Bala.
Grevillea robusta.....	Silk oak.
Guazuma ulmifolia.....	Guacimo.
Guilicima utilis.....	Thorny palm.
Gustavia superba.....	Membrilla.
Gynandropsis pentandra.....	Membrilla.
Hamelia patens.....	Kaffir plum.
Harpephyllum caffrum.....	Kaffir plum.
Hebechium coronarium.....	Ginger lily.
Hermesias grandiceps.....	Cross tree.
Hevea brasiliensis.....	Para rubber.
Hibiscus rosa.....	Para rubber.
Hippeastrum (Amaryllis) equestre.....	Lily.
Hura crepitans.....	Sandbox.
Hymenaea courbaril.....	Algaroba.
Inga spectabilis.....	Guava real.
Ipomoea bona-nox.....	Moon-flower.
Ipomoea guamoclit.....	Sweet-William.
Ipomoea tube-rosa.....	Yellow morning-glory.
Ixora sp.....	Graceful Jessamine.
Jasminum gracillimum.....	Spanish Jessamine.
Jasminum grandiflorum.....	Hardy Jessamine.
Jasminum officinale.....	Umbrella tree.
Jatropha actonifolia.....	Umbrella tree.
Jatropha curcas.....	Medicine nut.
Judd Lily.....	Medicine nut.
Kentia Belmoreana.....	Curly palm.
Lagerstroemia Indica.....	Crape myrtle.
Lansium domesticum.....	Langsat.
Lantana camara.....	Fern palm.
Lantana Borbonica.....	Fern palm.
Lawsonia alba.....	Henna.
Luhea rufescens.....	Guacimo colorado.
Luhea sp.....	Guacimo blanco.
Mamea Americana.....	Mamey.
Manihot aipi.....	Cassava.
Mangifera Indica.....	Mango.
Maranta arundinacea.....	Arrowroot.
Martinezia caryotifolia.....	Palm sp.
Melia Azedarach.....	China-berry.
Mimosa pudica.....	Sensitive plant.
Mirabilis jalapa.....	4-o'clock.
Momordica charantia.....	Cunde Amar.
Moringa olcitera.....	Marango.
Murraya exotica.....	Banana.
Musa Sapientium.....	Plantain.
Musa Paradisiaca.....	Plantain.
Myroxylon.....	Dragon's eye.
Nephelium longana.....	Oleander.
Nerium Oleander.....	Oleander.
Ocotea.....	Royal palm sp.
Oreodoxa oleracea.....	Porto Rican Royal palm.
Oreodoxa Borinquena.....	Royal palm (Cuba).
Oreodoxa regia.....	Royal palm (Cuba).
Ordinancia.....	Medicine nut.
Pachira Barrigon.....	Medicine nut.
Pachira Fendleri.....	Medicine nut.
Pachira macrocarpa.....	Medicine nut.
Paico.....	Medicine nut.
Panax excelsum.....	Medicine nut.
Panax plumatum.....	Medicine nut.
Pancratium ovatum.....	Medicine nut.
Pandanus utilis.....	Medicine nut.
Pandanus Veitchii.....	Medicine nut.
Passiflora laurifolia.....	Water lemon.
Passiflora quadrangularis.....	Grenadilla.
Pent. celtura.....	Avocado.
Persea gratissima.....	La Viuda.
Petroea volubilis.....	La Viuda.
Philodendron.....	Date palm.
Phoenix dactylifera.....	Ornamental date.
Phoenix reclinata.....	Ornamental date.
Phyllanthus acuminatus.....	Jobo de Iguana.
Phyllanthus umblica.....	Jobo de Iguana.
Phyllanthus sp.....	Jobo de Iguana.
Phyllanthus nivosus Var.....	Jobo de Iguana.
Rosea picta.....	Snow-flake.
Pilea.....	Lace plant.
Piper cottonella.....	Rain tree.
Pithecolobium saman.....	Rain tree.
Platymiscium polystachyum.....	Quira.
Plumbago capensis.....	Frangi-Pani.
Plumieria.....	Royal Poinciana.
Poinciana regia.....	Royal Poinciana.
Pollanthes (Pancratium) tuberosa.....	Tube rose.
Polypodium.....	Tree fern.
Pritchardii Gaudichaudii.....	Palm sp.
Pritchardii pacifica.....	Fan palm.

Psidium guava.....	Guava.
Punica granatum.....	Pomegranate.
Ravenala Madagascariensis.....	Traveller's tree.
Rheo bicolor.....	Marking nut.
Rhinacanthus nasutus.....	Marking nut.
Rollinia orthopetala.....	Biriba.
Sapindus saponaria.....	Soap berry.
Sapium Moritzianum.....	Marking nut.
Schizolobium excelsum.....	Marking nut.
Selenipedium chica.....	Vanilla.
Semecarpus anacardium.....	Marking nut.
Spondias lutea.....	Yellow plum.
Spondias edulis.....	Plum.
Spondias purpurea.....	Red plum.
Spondias dulcia.....	Ciruelo chino.
Sesbania grandiflora.....	Bobug nut.
Sterculia foetida.....	Bobug nut.
Sterculia carthaginensis.....	Panama.
Strychnos nux vomica.....	Kaffir orange.
Strychnos spinosa.....	Kaffir orange.
Swietenia mahogany.....	Mahogany.
Tabernaemontana coronaria.....	Crape Jessamine.
Tamarindus Indica.....	Tamarind.
Tectona grandis.....	Teak wood.
Theobroma cacao.....	Chocolate.
Thespesia populnea.....	Santa Maria.
Thevetia nerifolia.....	Cojon de gato.
Thevetia nitida.....	Thatch palm.
Thrinax parviflora.....	Thatch palm.
Trichilia.....	Thatch palm.
Vernonia.....	Para rubber.
Vinca rosea.....	Para rubber.
Vismia panamensis.....	Para rubber.
Xanthosoma sp.....	Indian Kale.
Xanthosoma atrovirens.....	Indian Kale.
Xanthosoma violaceum.....	Malagueto grande.
Xylopia grandiflora.....	Spanish bayonet.
Vucca elephantipes.....	Spanish bayonet.
Zebrina pendula.....	Wandering Jew.
Zephyranthes (Amaryllis) rosea.....	Zephyr Lily.
Zingiber officinale.....	Ginger.

Sand Plant at Nombre de Dios.

The sand dredging plant at Nombre de Dios, with the exception of the buildings, was removed in November, 1911, at which date sand dredging operations were discontinued. Since that time, the additional sand required at Gatun has been shipped from Balboa, or procured from one of the dredges filling into the Dam at Gatun from the old bed of the Chagres River. The work of dredging sand at Nombre de Dios was begun in March, 1909, and, during the period of operations there, a total of 785,893 cubic yards was shipped to the works, at an average cost of \$1.9177 per cubic yard delivered in stock pile at Gatun. A table of the shipments, by months, follows:

MONTHS.	1909	1910	1911
	Cu. Yds.	Cu. Yds.	Cu. Yds.
January.....	15,746	18,400	33,412
February.....	32,794	32,794	47,885
March.....	33,660	33,660	47,801
April.....	22,484	22,484	40,003
May.....	26,351	26,351	24,236
June.....	4,656	25,026	24,512
July.....	4,239	29,022	27,818
August.....	9,737	33,382	32,401
September.....	6,553	44,691	39,444
October.....	5,982	45,375	19,948
November.....	7,172	42,092	.....
December.....	.....	.....	.....
Total.....	51,007	368,432	366,454

SUMMARY.

	Cu. Yds.
1909.....	51,007
1910.....	368,432
1911.....	366,454
Total.....	785,893

One bid was received in answer to the advertisement recently for the sale of the Canal Commission buildings at Nombre de Dios, consisting of a Type-5 quarters, sick camp, and eight smaller houses. The tender was made by Robert Wilcox of Colon, who offered \$305 for the Type-5 house, sick camp, and six of the smaller buildings, but, in view of the fact that the upset price had already been fixed at \$1,000 for the lot, his bid was regarded as unsatisfactory, and it was rejected.

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

At the first meeting of the new Executive Board of the General Federation of Women's Clubs, held at French Lick, Indiana, the corresponding secretary of the Canal Zone. Mrs. Thomas Edwin Brown, Jr., was unanimously elected a member of the committee of social and industrial conditions. Mrs. Brown has been president of the Cristobal Women's Club, and for two years, 1909-1911, was president of the Federation. Prior to her coming to the Isthmus, she was vice-president of the Jacob Riis settlement in New York City.

At the meeting of the Women's Foreign Missionary Society of the Methodist Episcopal Church, held at East Balboa, with Mrs. Townsend, on September 6, Miss Annie Cooper, a missionary, who, for many years, has been working among the Indians in Central and South America, gave an informal talk concerning her work. The regular study of the meeting was suspended. The next meeting will be on October 4, at the home of Mrs. Rounds in Culebra. There will be an election of officers at that time.

Summer School at Gatun.

A summer school has been opened at Gatun with 14 pupils. The school, which is under the direction of Miss Florence Neville, the daughter of the president of the Gatun Woman's Club, is held in the Commission chapel every morning, except Saturday, from 8.45 to 11 o'clock. The pupils do drawing, painting, clay modeling, and raffia work. On Tuesday, Thursday, and Friday afternoons, a kindergarten class for small children is held.

Postal Business and Canal Zone Revenues.

The total amount of money orders issued in the Canal Zone during the month of August was \$365,073.51, of which \$296,762.83 was payable in the United States, \$67,005.58 in the Canal Zone, \$1,067.60 in Martinique, and \$237.50 in Costa Rica. The number of orders issued was 17,063, and the average value was \$21.38. Money order fees amounted to \$1,703.92, and the amount paid and repaid was \$87,887.66. Postal sales amounted to \$7,983.84, and newspaper postage to \$15.18.

Revenue collections during the month of August were, as follows: Bicycle and chauffeur licenses, \$80; motor vehicle licenses, \$303.50; steamboat inspection, \$89.45; taxes, licenses, etc., \$6,582.54; total, \$7,055.49.

Tug Service to Porto Bello and Toro Point.

Following is the schedule of Atlantic Division tugs in the service between Dock 13 and Porto Bello, and Dock 13 and Toro Point:

PORTO BELLO.

Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays—Leave Dock 13 at 5 p. m., arrive Porto Bello 10 p. m., returning, leave Porto Bello 11 p. m., arrive Dock 13 at 3 a. m.

Saturdays—Leave Dock 13 at 9 a. m., arrive Porto Bello 11 a. m., returning, leave Porto Bello 2 p. m., arrive pier No. 4, Colon, 4 p. m.

Every Saturday, except the first Saturday after the 20th of each month. *Sailing No. 1*—Leave Dock 13 at 2 p. m., arrive Porto Bello 4 p. m., returning, leave Porto Bello at 4 p. m., arrive at pier No. 4, Colon, 6 p. m. *Sailing No. 2*—Leave Dock 13 at 6 p. m., arrive Porto Bello 11 p. m., returning, leave Porto Bello 12 midnight, arrive Dock 13 at 4 a. m.

Sundays, immediately following the 20th of each month, ONLY—Leave Porto Bello 6 a. m., arrive Dock 13 at 8 a. m.

TORO POINT.

Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays. *Sailing No. 1*—Leave Dock 13 at 6.30 a. m.,

arrive Toro Point 7 a. m., returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. *Sailing No. 2*—Leave Dock 13 at 5 p. m., arrive Toro Point 5.30 p. m. *Special, Wednesdays, ONLY*—Leave Dock 13 at 12 noon, arrive Toro Point 12.30 p. m., returning, leave Toro Point 12.30 p. m., arrive Dock 13 at 1 p. m.

Saturdays. *Sailing No. 1*—Leave Dock 13 at 6.30 a. m., arrive Toro Point 7 a. m., returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. *Sailing No. 2*—Leave Dock 13 at 4.30 p. m., arrive Toro Point 5 p. m., returning, leave Toro Point 5.30 p. m., arrive Dock 13 at 6 p. m.

Sundays. *Sailing No. 1*—Leave Dock 13 at 9.30 a. m., arrive Toro Point 10 a. m.; returning, leave Toro Point at 10.30 a. m., arrive Dock 13 at 11 a. m. *Sailing No. 2*—Leave Dock 13 at 4.30 p. m., arrive Toro Point 5 p. m., returning, leave Toro Point 5 p. m., arrive Dock 13 at 5.30 p. m.

Rainfall from September 1 to 14, 1912. Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	1.29	13	2.96
Balboa.....	1.76	13	2.88
*Miraflores.....	2.01	2	5.57
Pedro Miguel.....	1.25	13	3.14
Rio Grande.....	1.01	11	2.39
<i>Central Section—</i>			
Culebra.....	1.08	11	3.08
*Camacho.....	1.04	11	2.40
Empire.....	.85	3	2.52
Gamboa.....	.82	13	3.02
*Juan Mina.....	1.49	6	4.45
Alhajuela.....	.38	3	1.52
*El Vigia.....	.50	5	2.13
*Gorgona.....	1.00	3	3.18
*Frijoles.....	3.25	2	8.87
*Monte Lirio.....	1.40	14	5.81
<i>Atlantic Section—</i>			
Gatun.....	2.45	2	5.66
*Brazos Brook.....	2.72	3	7.16
Colon.....	2.13	2	8.53
Porto Bello.....	1.41	2	15.62

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., September 13.

August Rainfall for Three Years.

STATIONS.	1910	1911	1912	Station Av.	Years of record	Rain's days 1912
<i>Pacific Section—</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>		
Ancon.....	12.00	7.21	6.33	7.53	16	20
Balboa.....	10.85	8.50	6.79	7.55	14	19
Miraflores.....	11.97	7.06	11.35	9.21	4	21
Pedro Miguel.....	10.08	5.43	9.51	8.88	5	19
Rio Grande.....	8.98	8.17	13.19	10.34	8	23
<i>Central Section—</i>						
Culebra.....	10.11	8.56	12.88	10.58	21	19
*Camacho.....	10.75	7.98	13.77	10.43	7	21
Empire.....	10.08	5.98	10.53	9.72	9	23
Gamboa.....	10.66	7.68	16.64	12.20	30	22
Juan Mina.....	12.88	11.04	11.96	2	21	
Alhajuela.....	13.43	10.79	12.87	13.08	14	19
El Vigia.....	15.01	12.56	14.96	13.44	4	21
Gorgona.....	10.84	8.51	14.82	12.21	9	19
Frijoles.....		13.63			1	27
Trinidad.....	12.03	8.17	7.68	11.28	5	22
Monte Lirio.....	13.68	9.58	8.15	11.14	5	24
<i>Atlantic Section</i>						
Gatun.....	13.85	7.91	11.98	14.34	7	25
Brazos Brook.....	13.56	12.19	14.42	14.68	7	30
Colon.....	14.93	11.60	9.87	15.01	42	20
Porto Bello.....	20.71	22.56	14.15	17.65	5	25

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, September 14, 1912. All heights are in feet above mean sea level.

DAY AND DATE.	STATION.			
	Vigia.	Alhajuela	Gamboa.	Gatun Lake.
Sun., Sept. 8.....	126.8	93.2	45.6	41.8
Mon., Sept. 9.....	127.4	93.6	45.9	42.0
Tues., Sept. 10.....	127.5	93.6	45.9	42.2
Wed., Sept. 11.....	126.7	93.3	46.0	42.4
Thurs., Sept. 12.....	127.4	93.5	45.9	42.7
Fri., Sept. 13.....	127.3	93.5	45.8	42.8
Sat., Sept. 14.....	127.6	93.7	46.0	43.2
Height of low water to the nearest foot.....	125.0	91.0	44.0	

OFFICIAL CIRCULARS.

Acting Head of Department of Law.

CULEBRA, C. Z., September 5, 1912.

CIRCULAR No. 459:

Effective this date, Mr. William K. Jackson will act as Head of the Department of Law during the absence on leave of Judge Frank Feuille.

GEO. W. GOETHALS, Chairman.

Signature of Witnesses on Pay Certificates.

CULEBRA, C. Z., September 10, 1912.

TO ALL CONCERNED:

It has been brought to my attention that the practice is more or less prevalent of timekeepers signing their names as witness in the blank space provided therefor on pay certificates prior to the actual affixing of the signature by the payee. This practice, if allowed to continue, opens the way for fraud.

Any one detected in signing as witness in this manner will be discharged.

GEO. W. GOETHALS, Chairman and Chief Engineer.

Partially or Totally Disabled Employees.

CULEBRA, C. Z., September 12, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

Please advise me not later than September 18, how many men are employed in your rolls, both gold and silver, who are partially or totally disabled on account of injuries received in the service, their present occupation, rate of pay, and whether they have families dependent upon them for support.

This refers particularly to men who are permanently crippled, and not to those who are temporarily disabled, and who will later on be able to perform ordinary laborer's duties, such as in the case of a man whose leg has been broken.

GEO. W. GOETHALS, Chairman.

Accommodations on the Steamship "Cristobal."

CULEBRA, C. Z., September 16, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

The entire accommodations on the steamship *Cristobal*, scheduled to sail from New York, on or about November 7, having been reserved for special purposes on both the southbound and northbound trips, no requests for transportation for employees, or members of their families, will be issued by this office for the northbound voyage.

GEO. W. GOETHALS, Chairman.

Acting Depot Quartermaster.

CULEBRA, C. Z., September 16, 1912.

Mr. C. L. PARKER,

Assistant Depot Quartermaster,
Mount Hope, C. Z.

Sir: Effective September 15, 1912, and during the absence of Capt. Courtland Nixon, on leave, you will act as depot quartermaster. You are authorized to receive and receipt for supplies of the Isthmian Canal Commission consigned to Col. C. A. Devol, or the Chief Quartermaster, Isthmian Canal Commission, to accomplish bills of lading, to certify invoices for payment as to quantity and quality of supplies shown on such invoices, and, in general, to perform such duties as properly belong to the position of the depot quartermaster.

R. E. WOOD, Acting Chief Quartermaster.

Family Quarters.

Applications for married quarters on file on August 31, 1912, were, as follows:

DISTRICT.	List No. 1.	List No. 2.
Ancon.....	4 (1)	79 (24)
Ancon Hospital.....		3
Balboa.....	1 (1)	41 (6)
Bas Obispo.....		22 (2)
Colon Hospital.....		1
Corozal.....	2	63 (17)
Cristobal.....		120 (16)
Culebra.....		35 (1)
Empire.....		62 (19)
Gatun.....	1	102 (23)
Gorgona.....	1 (1)	61 (23)
Las Cascadas.....		26 (6)
Pedro Miguel.....	5 (2)	50 (11)
Porto Bello.....	1 (1)	8 (3)
Toro Point.....		4
Total.....	15 (6)	677 (140)

NOTE—The figures in parentheses show the number of applicants already occupying regular or nonhouse-keeping family quarters at stations other than those at which applications are filed.

Cold Storage Prices Unchanged.

The prices of cold storage articles at the commissaries, as printed in *The Canal Record* of September 11, remain unchanged.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

EMPIRE.

The local bowling tournament has closed, with the following results:

Team.	Won.	Lost.
Independents.....	16	8
Democrats.....	13	11
Progressives.....	13	11
Socialists.....	12	12
Suffragettes.....	8	16

Mr. Potter of the "Independent" team won the high average, with a record of 173 for 24 games. Mr. Sawtelle of the "Socialist" team made the high score of 244.

Saturday, September 14, two of the Empire teams bowled a team from Gorgona, and one from Corozal, winning two out of three games from both teams.

The pool match between Mr. DePoorter of Gatun and Mr. Pearson of Empire, played on September 14, was won by Mr. DePoorter by a score of 157 to 65.

GORGONA.

Owing to repairs on the bowling alleys at Gorgona, they have been closed temporarily.

A pool and billiard tournament has been started. Following is the standing of the teams:

Name.	Won.	Lost.	P. C.
Harter.....	4	0	1.000
Robitoy.....	1	1	.500
Means.....	0	1	.000
Trent.....	0	1	.000
Walcott.....	0	2	.000

The basketball team practices twice a week, and expects to be in condition when the league opens in October.

A new carom board has been procured at the clubhouse for the boys' department.

A mixed chorus will soon be organized. All singers of Gorgona are requested to hand their names to the secretary. It is desired to know of any talent that may be available for this purpose.

GATUN.

A "smoker" was held on Saturday evening, September 14, with an attendance of over 300 men. Among those who participated were the following: Tenth Infantry orchestra; R. S. Mosher, baritone; Henry Cogan, song soloist; Charles Ray, banjoist; Tenth Infantry Squad in army calisthenics; Robitoy and Cogan, song and dance artists; E. Burmaster in a "Barbados Talk"; Fred White, xylophone soloist; Archie Harper, Scotch songs; Joe Lynch, old time ballads; G. R. D. Kramer, Jr., club swinging; E. Paul Case, bass; wrestling, Heine versus Brennan, and Hughes versus Flynn.

There is considerable interest in the "Lock City" billiard tournament. There are 13 entries. The first week's results will probably be published in the next issue of THE CANAL RECORD.

Messrs. DePoorter and Pearson will play a 150-point match to decide the pool championship of the Isthmus on Saturday, September 21. At the same time, "open house" will be observed, with additional pool and billiard games.

CRISTOBAL.

The next of the series of moving picture entertainments will be on Friday night, September 20.

There will be regular basketball practice on Tuesday and Thursday nights of each week, at 8 o'clock, when entertainments do not conflict. All members interested in trying for the team, which is to represent the Cristobal association in the Isthmian league, are requested to come and try out.

On Saturday night, September 14, the Cristobal bowling team took two out of three games from the Culebra team by the following scores:

Culebra.....	841	804	789
Cristobal.....	752	854	828

Mr. T. Burns rolled 221 in the second game for Cristobal.

On Saturday night, a "Married Folks" tournament will be rolled in duckpins. Any members, with their wives are eligible, and should hand their names to Mr. Bullard by September 21.

The two classes in Spanish are making progress. On Monday, a new class was organized with eight pupils. Mr. José Gomez is the teacher.

On Friday night, September 13, Mr. F. L. Bernsee played simultaneous checkers. Forty-five games, in all, were played; two games were lost to Mr. Gartrell of Gatun, one was drawn with Mr. Hagan, and one with Dr. Dunn, Mr. Bernsee winning 49 games.

Sale of Public Buildings at Cucaracha.

OFFICE OF THE CHIEF QUARTERMASTER,
CULEBRA, C. Z., September 16, 1912.

Sealed proposals will be received at this office until 3 p. m., Monday, September 30, 1912, and then opened, for the purchase of any or all of four buildings located at Cucaracha. Number of buildings and full information will be furnished upon application to any District

Quartermaster, or to this office. Proposals must be accompanied by five per centum (5%) of amount bid. Envelopes containing proposals should be endorsed "Proposals for purchase of buildings" and addressed to Capt. R. E. Wood, Acting Chief Quartermaster, Culebra, Canal Zone.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon, during the week ending September 14: *Thames*, September 8, from New York, with 245 bundles steel pipe, for stock.

Carrillo, September 8, from New York, with 66 pigs tin, 59 cases soap, for stock; 50 cases roofing paper, for Mechanical Division; 13 cases water heaters, for Panama Railroad Company; 71 cases castings, for superintendent of erection.

Colon, September 9, from New York, with 10 cases crane material, 20 cases hair, for Panama Railroad Company; 106 pieces castings, 15 cases insulating tape, 12 bundles car springs, 19 barrels batteries, 18 locomotive tires, for Mechanical Division; 50 cases valve parts, 56 barrels insulators, for superintendent of erection; 45 kegs wire nails, 20 kegs rock salt, 50 cases handles, 31 bales packing, 62 pigs tin, 250 bundles brooms, 70 bales rubber hose, 13 cases paint, for stock; 16 cases rubber boots, for Pacific Division; 30 cases drugs and sundries, for Sanitary Department; and a miscellaneous cargo, the whole consisting of 1,060 packages, weighing 120 tons.

Eastlands, September 10, from Baltimore, with 128 pieces structural steel, 26 pieces hawsepipes, 35 packages valve parts, 242 crates rack castings, 319 cases valve machinery, 80 cases gate machinery, for superintendent of erection; 180 pieces steel girders, for Panama Railroad Company; 146 bundles steel bars, for Pacific Division; 1,122 bundles steel bars, for fortifications; one life boat, for Atlantic Division; 12,000 cases dynamite, 100 cases turpentine, 82 bundles steel bars, 22,665 pieces steel bars, for stock.

Santa Marta, September 11, from New York, with 25 crates stove pipe, for Pacific Division; 14 coils rope, 10 crates hardware, for stock.

Abangarez, September 12, from New Orleans, with 71 pieces castings, 27 rolls cotton duck, 40 cases paint, 150 cases scouring bars, 929 pieces lumber, 302 pieces piling, 720 cases oils, for stock; 885 pieces lumber, for Mechanical Division.

Cristobal, September 12, from New York, with 26 packages castings, for superintendent of erection; 28 cases rubber hose, for stock; 168,628 bags cement, for for Atlantic and Pacific Division.

The total value of material received during the month of August was \$1,113,701.57 distributed, as follows:

Mount Hope (stock).....	\$313,684.10
Atlantic Division.....	42,741.72
Pacific Division.....	141,496.74
Mechanical Division.....	68,107.32
Sanitary Department.....	7,290.18
Chief Engineer.....	636.87
Civil Administration.....	308.79
Superintendent of Erection.....	432,838.65
Examiner of Accounts.....	252.65
Fortification Division.....	12,174.69
Panama Railroad Company.....	94,169.86

Total.....\$1,113,701.57

The material was received by 34 steamers, the total weight of cargo exclusive of lumber, piling and ties being 28,393 tons. Some of the more important items received were, as follows: 1,540,438 feet, board measure, yellow pine lumber; 3,447,648 feet, board measure, white oak lumber; 1,499 pieces piling; 40,500 pieces cross-ties; 607 pieces steel rails; 1,525 car wheels; 1,000 tons lock machinery; 1,000 tons emergency dams-steel; 800 drums oils.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending September 25, 1912 (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
September 19.....	13.30	9.32	4.07	10.25	
September 20.....	4.40	10.50	5.20	11.55	
September 21.....		6.05	12.17	6.31	
September 22.....	1.07	7.12	1.25	7.28	
September 23.....	1.57	8.00	2.13	8.15	
September 24.....	2.34	8.40	2.50	8.52	
September 25.....	3.05	9.13	3.20	9.26	

Married.

POTTS-MCCAULEY—At Buffalo, N. Y., on Monday, September 2, Ethel Gertrude McCauley of Buffalo, to Samuel Chatham Potts of Lake Waccamaw, North Carolina. Isthmian residence, Colon, R. P.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Ancon.....	P. R. R. Thursday.....	Sept. 12
Panama.....	P. R. R. Saturday.....	Sept. 14
Allianca.....	P. R. R. Friday.....	Sept. 20
Colon.....	P. R. R. Tuesday.....	Sept. 27

CRISTOBAL TO NEW YORK.

Advance.....	P. R. R. Saturday.....	Sept. 21
Cristobal.....	P. R. R. Monday.....	Sept. 23
Panama.....	P. R. R. Friday.....	Sept. 27
Allianca.....	P. R. R. Thursday.....	Oct. 3
Colon.....	P. R. R. Wednesday.....	Oct. 9

NEW YORK TO COLON.

Metapan.....	U. F. C. Wednesday.....	Sept. 11
Trent.....	R. M. Saturday.....	Sept. 14
Tivives.....	U. F. C. Saturday.....	Sept. 14
Prinz Sigismund.....	H. A. Saturday.....	Sept. 14
Zacapa.....	U. F. C. Wednesday.....	Sept. 18
Sixola.....	U. F. C. Saturday.....	Sept. 21
Prinz Joachim.....	H. A. Saturday.....	Sept. 21
Almirante.....	U. F. C. Wednesday.....	Sept. 21
Magdalena.....	R. M. Saturday.....	Sept. 28
Prinz Eitel Friedrich.....	H. A. Saturday.....	Sept. 28
Carrillo.....	U. F. C. Saturday.....	Sept. 28
Santa Marta.....	U. F. C. Wednesday.....	Oct. 2
Prinz August Wilhelm.....	H. A. Saturday.....	Oct. 5
Turrialba.....	U. F. C. Saturday.....	Oct. 5
Metapan.....	U. F. C. Wednesday.....	Oct. 9
Tivives.....	U. F. C. Saturday.....	Oct. 12
Clyde.....	H. A. Saturday.....	Oct. 12
Prinz Sigismund.....	H. A. Saturday.....	Oct. 12
Zacapa.....	U. F. C. Wednesday.....	Oct. 16

COLON TO NEW YORK.

Santa Marta.....	U. F. C. Thursday.....	Sept. 19
Prinz August Wilhelm.....	H. A. Monday.....	Sept. 23
Turrialba.....	U. F. C. Tuesday.....	Sept. 24
Metapan.....	U. F. C. Thursday.....	Sept. 26
Prinz Sigismund.....	H. A. Monday.....	Sept. 30
Clyde.....	R. M. Tuesday.....	Oct. 1
Tivives.....	U. F. C. Saturday.....	Oct. 1
Zacapa.....	U. F. C. Thursday.....	Oct. 3
Prinz Joachim.....	H. A. Monday.....	Oct. 7
Sixola.....	U. F. C. Tuesday.....	Oct. 8
Almirante.....	U. F. C. Thursday.....	Oct. 10
Prinz Eitel Friedrich.....	H. A. Monday.....	Oct. 14
Carrillo.....	U. F. C. Tuesday.....	Oct. 15
Oruba.....	R. M. Tuesday.....	Oct. 15

NEW ORLEANS TO COLON.

Atenas.....	U. F. C. Saturday.....	Sept. 14
Heredia.....	U. F. C. Wednesday.....	Sept. 18
Parismina.....	U. F. C. Saturday.....	Sept. 21
Abangarez.....	U. F. C. Saturday.....	Sept. 28
Heredia.....	U. F. C. Wednesday.....	Oct. 2
Atenas.....	U. F. C. Saturday.....	Oct. 5

COLON TO NEW ORLEANS.

Abangarez.....	U. F. C. Thursday.....	Sept. 19
Atenas.....	U. F. C. Thursday.....	Sept. 26
Heredia.....	U. F. C. Thursday.....	Sept. 26
Parismina.....	U. F. C. Thursday.....	Oct. 3
Abangarez.....	U. F. C. Thursday.....	Oct. 10
Heredia.....	U. F. C. Thursday.....	Oct. 10

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston at 10 a. m., on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* sail at 2 p. m., and call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m.

The following ships arrived at, or departed from the port of Balboa during the week ending September 14: Arrivals—September 8, *Manavi*, from Buenaventura; September 9, *Salvor*, from Victoria, B. C.; September 9, *Mantaro*, from Callao; September 11, *Palena*, from Valparaiso; September 11, *Santa Rita*, from Port Harford; September 12, *City of Sydney*, from San Francisco; September 13, *Pennsylvania*, from San Francisco.

Departures—September 8, *Aztec*, to San Francisco; September 9, *Ecuador*, to Guayaquil; September 9, *Mexico*, to Valparaiso; September 9, *Pachitea*, to Callao; September 13, *Chile*, to Guayaquil; September 13, *City of Para*, to San Francisco; September 14, *Manavi*, to Buenaventura; September 14, *Santa Rita*, to Port Harford.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, SEPTEMBER 25, 1912.

No. 5.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Damage in Culebra Cut from Heavy Rains.

High water, pouring from the steep watershed of the Comacho valley during a heavy rain in the evening of September 21, broke through a dike closing an old drain back of the Lirio planing mill and flooded a portion of Culebra Cut, south of Empire. All the tracks on the bottom of the Cut were covered with water and mud. The dike was quickly replaced by a small force of men, using sod and clay with scrap iron lying near, and the Cut was drained by the next evening. The old drain was part of a diversion running north from Culebra, which was intersected by the breaking back of a slide during the past dry season. A new channel was cut farther west, subtending the section broken by the slide, and dikes were built to close the old channel. These had proved sufficient until the extraordinary fall of September 21, when 4.2 inches fell in three hours at Comacho reservoir.

On the east side of the Cut, the repairs to the Obispo Diversion, at La Pita point, three miles from the north end of the Cut, at which it was broken by a slide on August 20, were sufficient to keep the water from breaking through. Had it done so, it is estimated that the heavy flow would have filled the Cut with thirty feet of water. No water has escaped into the Cut at that point since September 8.

Affected by the same heavy rain, the slide on the west bank at Culebra pushed out at the toe, partly burying two steamshovels at its base and closing the pioneer cut for a distance of 50 feet. The cut was reopened, the shovels have been dug out, and the work is progressing as rapidly as possible.

Farm for Disabled Laborers.

A committee, consisting of Maj. R. E. Noble, chairman; Capt. R. E. Wood, and Mr. C. A. McIlvaine, has been appointed to select a site in the Canal Zone for a farm on which laborers who have become insane, chronically ill, or crippled in the service of the Isthmian Canal Commission, can be cared for and given

employment. The chronically ill and the insane have been heretofore the unremunerative wards of the Commission, while the crippled have been engaged for such work as they are able to do. The farm, affording healthful employment, will also be as nearly self-supporting as it is possible to make it.

New Trestle Across Culebra Cut.

Driving piles for the trestle to take the place of the present bridge, No. 57½, of the Panama railroad, crossing Culebra Cut north of Pedro Miguel station, was completed on September 21. Building the 700 feet of trestle occupied 19 days. About 1,300 feet of track have been laid for the approaches to the trestle, and as soon as the track over the trestle is laid, traffic will be sent across it and the removal of the present girder bridge will begin, to allow the completion of the Canal channel at its site. In the construction of the trestle, provision was made, by the installation of several bents which wrecking cranes can easily lift aside, for allowing the ladder dredge *Corozal* to pass through into Culebra Cut, with the surface of the water at approximately 65 feet above sea-level. The molded breadth of the *Corozal* is 45 feet, and its draft, when light, is 12 feet forward, and 14 feet four inches aft.

Steamshovel Record.

Steamshovel No. 134 (H. F. Huth, engineer and Michael J. Carroll, craneman,) working in the red clay borrow pit for Gatun Dam, excavated on September 20, a total of 230 large Oliver dump cars, or a total of 3,910 cubic yards in the working day of eight hours.

This is the highest daily record for a 70-ton shovel since the beginning of operations by the Commission.

Previous high daily records were made on September 16, 17, and 18 by steamshovel No. 120 (Kelleher and Simonson, operators,) which loaded 199, 196, and 214 large Oliver cars, respectively, in the working day of eight hours.

Dock Laborers Quit Work.

The laborers, employed by the cargo handling contractors, Messrs. George Greenslade and Hugh McKay, at the Panama railroad wharf at Balboa, stopped work at noon on Friday, September 20, and during the forenoon of the following day, the men employed by the contractors at the American wharf in Panama quit also. The contract between the Panama Railroad Company and Messrs. Greenslade and McKay for handling the cargoes at Balboa, and in Panama, went into effect on September 9. The contractors established a wage scale, whereby the men received 12 cents gold an hour, and time and a half for nights and overtime, and paid the men as soon as each ship had been unloaded. The laborers became dissatisfied with the wage scale, claiming that they did not receive as much as they expected. A few men re-

mained at work, but up to Tuesday, September 24, practically all the cargo handling was done by the ship crews engaged temporarily by the contractors, and as a result, the work proceeded slowly. On Monday, September 23, the contractors posted a notice that the arrangement under which the men worked when employed by the Panama Railroad Company would be placed in effect as of that date. This provides for a wage scale of 11 cents gold an hour, with time and a half for nights and overtime, a pay day once in two weeks, free quarters, free medical attention, and free transportation to the employees at Balboa, to and from Panama. Some of the men returned to work Monday night, and it is expected that a full complement will be recruited within the next few days.

Reconstruction of Panama Market and Pier.

Distinct advance in the sanitation of Panama will be accomplished through the reconstruction of the old public market, located on the north sea wall, at a point, which has been the principal landing place for small boats from the adjacent coast since the founding of the city. The plan, which is being carried out under the supervision of American engineers in the Department of Public Works of the Republic of Panama, contemplates the rebuilding of the present fish and meat market, and a portion of the adjacent pier; and the building of a new fish market. The new structures, with the exception of the corrugated iron sidings, will be of reinforced concrete throughout. The pier and fish market have advanced well toward completion, and the reconstruction of the market proper has been begun. The old market, as originally built in 1877, rested on land, but an addition was built to it, over the sea, in 1885. Combined, the structures had a front of 163 feet 11½ inches on the street, and a depth of 176 feet six inches. The structural iron used, which was purchased in Italy, is in good condition, and is to be used in the erection of smaller markets in the interior of the Republic.

In the new market structure, the middle part of the roof will be a monitor, raised eight feet above the rest of the roof and 32 feet above the floor. The sides of the monitor will have pivoted windows, manipulated from the floor, to afford light and air to the central part of the building. Directly under the monitor will be a mezzanine floor, 14 feet above the main floor, and 23 feet wide by 136 feet two inches long. The floor area, including the mezzanine and the fish market, will be 37,268 square feet. Stalls for the sale of meat and truck will be built on sanitary lines, with steel and concrete, and the meat and fish sections will be enclosed in fine screening. The entire building will be vermin proof.

The rebuilt market pier is 46 feet seven and one half inches wide and extends 233 feet from the sea wall, connecting at the outer end with a steel pier which, begun in 1909, is in

NOTES OF PROGRESS.

(Continued.)

good condition and forms an extension of the market pier proper. The old market pier was erected in 1890 on steel piers, with a floor system of steel, and columns of cast iron. The supporting piers were encased in concrete in 1909, but continued to corrode, and, as in many instances the flanges and webs of the floor supports had rotted away, the structure was condemned. The new structure, the style of which is typical of the entire reconstruction, is supported on concrete piers built beside the old ones. The concrete was mixed in the proportions of 1:3:6. For some of the piers a waterproofing compound of potash and alum was poured on the face at the time of placing, while in others, no waterproofing compound was used. Records have been kept, and examinations will be made from time to time, of the effect of sea water on the different mixtures. The roof, entirely of reinforced concrete with no special waterproofing, is made tight by a simple arrangement, which is the idea of Mr. A. P. Cray, the designing engineer. On the edge of each slab is raised, at the time of placing the concrete, a lug four inches wide and one and one-half inches high. At the junctures of slabs, two lugs are in juxtaposition; the line of juncture is covered with a reinforced concrete cap, draining off beyond the lugs.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 91 per cent completed, 205,960 cubic yards, out of a total of 225,000, having been placed at the close of work on September 21. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid	Hours worked.	No. Mixers.
	Cu. Yds.		
September 16.....	52	4 75	2
September 17.....	80	7.00	1
September 18.....	52	4.00	1
September 19.....	32	3.00	1
September 20.....	..	.00	1
September 21.....	47	4 75	1
Total.....	263	23.50	1.17
Previously reported...	205,697		
Grand total.....	205,960		

Immigration at Ports of Ancon and Panama.

The number of persons who landed at the ports of Ancon and Panama from foreign ports during the month of August was 613, consisting

of 476 cabin, and 137 steerage passengers. The number of persons who embarked for foreign ports was 491, consisting of 358 cabin, and 133 steerage passengers. The number of persons who landed at these ports during the month over those who embarked was 122.

Steamship "Pleiades" Saved.

The steamship *Pleiades*, of the California-Atlantic Steamship Company's service, which went aground off Cape San Lazaro, along the

coast of Lower California on August 16, has been recovered by a wrecking outfit sent from San Francisco, and is proceeding to that city under its own steam. No lives were lost in the wreck. One million and a half, out of 3,000,000 feet of lumber consigned to the Isthmian Canal Commission, were jettisoned. The rest of the cargo was saved.

Launch Service to Taboga.

The steamer *Samudra* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday, and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

CONCRETE WORK IN THE LOCKS.

About 93 per cent of the concrete for the locks is in place, the amount at the close of work on September 21 being 3,998,560 cubic yards, out of a total of approximately 4,302,563. A total of 12,644 cubic yards of concrete was laid in the locks during the week ending September 21.

GATUN LOCKS.

About 95 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on September 21 being 1,898,090 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day of the week ending September 21, and of the total follows; and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers.	Concrete placed.	Hours worked.	No. of mixers.		
	Cu. Yds.			Cu. Yds.				Cu. Yds.
September 16.....	52	0 87	1	..	..	..	..	52
September 17.....	8	0.13	1	..	..	..	..	8
September 18.....	186	2.77	2	..	..	..	..	186
September 19.....	30	0.50	2	..	..	..	..	30
September 20.....	96	1.60	2	..	..	..	..	96
September 21.....	48	0.80	2	..	..	..	..	48
Total.....	420	6.67	1.43	..	..	..	..	420
Previously reported.....	..	..	..	..	..	..	..	1,897,670
Grand total.....	..	..	..	..	..	..	..	1,898,090

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 98 per cent completed, 878,478 cubic yards, out of a total of 889,827, bucket measurement, having been placed at the close of work on September 21. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			1-cubic yard mixers				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
September 16.....	91	7.50	2	.....	91
September 17.....	155	13.25	4	.....	155
September 18.....	171	14.00	3	.....	171
September 19.....	139	17.00	4	.....	139
September 20.....	242	13.50	4	.....	242
September 21.....	220	30.50	4	.....	220
Total.....	1,018	95.75	3.33	.....	1,018
Previously reported.....	4,493	877,460
Grand total.....	4,493	878,478

MIRAFLORES LOCKS.

Over 86 per cent of the concrete for the system of two twin locks at Miraflores was in place September 21, the total amount on that date being 1,221,992 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.										Total.	
				2-cubic yard mixers.			½-cubic yard mixers.				1-cubic yard mixer.				
	Concrete	Hours	No. of	Concrete	Hours	No. of	Concrete	Hours	No. of	Large	Concrete	Hours	No. of		
	placed.	worked.	mixers	placed.	worked.	mixers	placed.	worked.	mixers	stone.	placed.	worked.	mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	
September 16.....	534	19.75	6	1,000	13.50	2	90	6.50	1	327	36.50	5	.....	1,951
September 17.....	548	26.00	7	662	8.67	2	.....	.....	.....	328	48.00	7	.....	1,538
September 18.....	676	19.83	6	1,032	14.17	2	.....	.....	.....	520	50.50	6	.....	2,228
September 19.....	646	11.00	4	838	12.83	2	133	7.00	1	435	49.00	6	.....	2,052
September 20.....	826	33.00	6	212	3.17	2	180	12.00	2	348	47.50	6	.....	1,566
September 21.....	564	13.50	7	770	12.50	2	178	11.50	2	349	39.00	6	.....	*1,871
Total.....	3,794	123.08	6	4,514	64.84	2	581	37.00	1	2,307	270.50	6	.....	11,206
Previously reported.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,693	1,210,786
Grand total.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,693	1,221,992

*Includes 10 cubic yards mixed by hand.

HOTELS AND MESSES.

More Meals Served Laborers in 1911-12, but Less to Gold Employees.

There were 19 line hotels, three night restaurants, 18 European laborers' messes, and 18 common laborers' kitchens, in operation by the Subsistence Department of the Canal Commission at the close of business on June 30, 1912, an increase of two messes and four kitchens over the previous year.

The hotel and kitchen at Nombre de Dios and the hotel at Tabernilla were closed during the year, because work at those points was completed. One of the two messes at Bas Obispo was also closed. Hotels, messes, and kitchens were opened at Naos Island and at Fort Randolph, a mess and kitchen at Cerro, and kitchens at Rio Grande and Paraiso. The territory served is divided into 15 districts, each in charge of a chief steward.

The total revenue for the year from the line hotels, restaurants, messes, and kitchens was \$1,263,869.81, an increase of \$9,607.41 over last year; the total cost of operations was \$1,226,352.16, an increase of \$4,882.90; the profit was \$37,517.65, an increase of \$4,724.51 over last year. The ratio of supplies consumed to revenue was 0.41 per cent more than last year, and of expense to revenue 0.77 per cent less, making the ratio of total cost of operations to revenue 0.36 per cent less than last year. The percentage of profit to revenue was 2.97 per cent, 0.36 per cent greater than last year.

The expense for salaries and wages for line hotels, restaurants, messes, and kitchens was \$162,006.78, a reduction of \$10,022.74 from last year. The proportion of pay roll to revenue was 12.8 per cent, 0.9 per cent less than last year.

The following table shows the quantities and costs of the principal articles consumed in the line hotels, restaurants, messes, and kitchens during the year:

ARTICLE.	Quantity.	Cost.
Beef, fresh, lbs.	2,782,044	\$276,924.39
Beef, salt, lbs.	28,533	3,330.82
Bacon, lbs.	64,231	14,602.80
Beans, lbs.	227,743	12,804.82
Butter, lbs.	111,363	39,825.48
Bread, lbs.	2,707,652	108,298.08
Cabbage, lbs.	167,190	6,250.90
Cocoa, lbs.	32,798	5,211.72
Coffee, lbs.	83,953	16,015.04
Eggs, doz.	181,787	57,416.65
Fish, fresh, lbs.	113,641	8,464.75
Fish, canned, tins.	41,602	3,850.64
Fish, cured, lbs.	60,109	4,849.28
Flour, lbs.	472,811	14,191.95
Fruits, fresh.		27,537.15
Fruits, canned, tins.	81,458	23,267.86
Garbanzos, lbs.	227,808	9,698.60
Ham, lbs.	36,238	7,017.00
Ice cream, gals.	53,590	27,255.00
Lamb, fresh, lbs.	17,345	2,312.40
Lard, lbs.	108,842	11,115.19
Macaroni, lbs.	206,827	14,837.94
Milk, tins.	229,742	19,878.41
Mutton, fresh, lbs.	22,532	2,547.35
Onions, lbs.	175,730	7,528.04
Peas, lbs.	126,998	6,609.35
Pork, fresh, lbs.	133,400	20,308.46
Pork, salt, lbs.	4,673	576.21
Potatoes white, lbs.	1,436,050	45,445.27
Potatoes, sweet, lbs.	251,067	4,519.02
Poultry, lbs.	189,934	38,338.58
Rice, lbs.	483,717	13,909.85
Rolls, doz.	45,262	10,217.51
Sugar, granulated, lbs.	216,492	11,768.15
Sugar, yellow, lbs.	631,557	28,127.79
Tea, lbs.	9,271	2,989.90
Veal, fresh, lbs.	80,636	12,369.75
Vegetables, fresh, lbs.		18,879.46
Vegetables, canned, tins.	150,932	22,326.82
Yams, lbs.	65,175	1,955.25

The total number of meals served in line hotels was 2,075,335, which was 141,405, or 6.38 per cent less than last year; the total number of rations served in European laborers' messes was 1,108,175, which was 53,630,

or 5.09 per cent more than last year. The total number of rations served in common laborers' kitchens was 584,457, which was 139,954, or 31.49 per cent more than last year. The average daily attendance during June, 1912, was 2,682 at the line hotels, 2,834 at the messes, and 1,446 at the kitchens. The attendance at the line hotels was determined on the basis that each guest averages two meals per day.

Additional accommodations were procured at the Hotel Tivoli during the year by the building of a new wing, which increased the number of rooms opening on private bath from

28 to 90. There was also bought and paid for, as an operating expense, furniture and equipment to the value of about \$10,000, the greater part of which was for use in the new rooms.

As a result of the year's operations, the line hotels and restaurants showed a loss of \$12,085.37, the European laborers' messes showed a profit of \$38,455.78, and the common laborers' kitchens showed a profit of \$11,147.34. The profit for the year resulting from the operation of the Hotel Tivoli was \$53,652.36. The total profits amounted to \$91,170.01, and increase over last year of \$31,949.82.

LABOR FORCE AND QUARTERS IN AUGUST.

On August 28, there were 34,837 employes actually at work on the Canal and the Panama railroad, and of that number, 28,982 were Canal employes. The gold force on the Canal work, composed almost entirely of white Americans, was 4,122. The force report for August 28 was, as follows:

DEPARTMENT.	SILVER EMPLOYES.*											Total silver.	Total gold.	Grand total.		
	Artisans.					European laborers.		West Indian laborers.								
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	10 cents.	15 cents.	20 cents.	16 cents.	13 cents.				10 cents.	7 cents.
Co. st'ct'n and Eng'ng.	4,187	11	13	243.	809	2,934	3,520	642	104	548	5,074	2,304	†254	20,643	3,126	23,769
Civil Administration.....	161	.....	.....	2	4	24	.....	.....	.....	.....	10	.....	.....	201	307	508
Sanitation.....	681	.....	.....	2	3	5	.....	.....	1	1	9	322	3	1,077	356	1,883
Quartermaster's.....	889	.....	.....	102	184	154	41	4	28	.....	184	741	12	2,319	182	2,011
Subsistence.....	652	.....	.....	2	.....	5	.....	.....	.....	.....	184	.....	.....	659	50	709
Disbursements.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	22	29
Examinat'n of Accounts.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	79	53
Total.....	6,561	11	13	351	1,600	3,122	3,561	646	133	549	5,267	3,377	†269	24,560	4,122	28,982
Month previous.....	6,460	10	13	372	969	3,175	3,835	507	157	472	4,714	3,679	†8	24,645	4,180	28,825

Panama railroad force, 4,564; Panama railroad commissary force, 1,291. Total, 5,855. I. C. C. force, 28,982. Grand total, 34,837.

*All wages specified are in gold. †Includes four at 5 cents. ‡Includes 10 at 5 cents.

The force report for the Department of Construction and Engineering on August 28, follows:

DIVISION.	SILVER EMPLOYES.*													Total silver.	Total gold.	Grand total.	
	Artisans.					European laborers.		West Indian laborers.									
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.				
Chief Engineer	245			42	165	367	87	42	...	129	823	301	15	2,276	441	2,657	
Mechanical	268	6	36	36	80	5,6	42	1	...	...	...	64	9	1,907	76	2,669
Atlantic	1,340	5	68	196	541	973	185	...	23	554	180	25	4,089	574	4,673		
Central	957			25	116	344	1,379	52	87	396	676	1,450	138	5,660	586	6,246	
Pacific	1,377		1	72	252	1,126	1,039	352	17	...	2,139	309	767	6,761	763	7,524	
Total	4,187	11	13	243	809	2,934	3,520	612	104	518	5,074	2,304	†254	20,643	3,126	23,769	
Month previous	4,131	10	13	240	756	2,963	3,777	564	115	470	4,836	325	†26	20,307	2,152	22,559	
* All wages specified are in gold. † Includes four at 5 cents. ‡ Includes 1 at 5 cents.																	

*All wages specified are in gold. †Includes four at 5 cents. ‡Includes 10 at 5 cents.

QUARTERS.

On August 31, there were 23,093 occupants of Commission quarters, as follows:

PLACE.	Gold.			Europeans.			West Indians.		
	Men	Women	Children	Men	Women	Children	Men	Women	Children
Balboa	219	32	46	368	...	...	372	...	...
Ancon	480	294	202	48	...	...	954	...	...
Corozal	413	78	75	263	...	...	327	...	...
Miraflores	15	2	1	569	...	...	169	...	...
Pedro Miguel	294	72	79	326	...	...	322	...	...
Paraiso	207	77	80	253	...	...	223	...	...
Culebra	338	181	177	364	...	...	344	...	...
Empire	161	84	69	465	...	...	445	...	...
Las Cascadas	63	39	31	34	...	...	163	...	...
Bas Obispo	712	232	291	90	...	...	309	...	...
Gorgona	801	206	190	1,340	...	...	1,008	...	...
Gatun	755	262	277	393	...	...	1,280	...	...
Cristobal	55	14	23	58	...	...	328	...	...
Toro Point	62	26	27	83	...	...	236	...	...
Porto Bello	...	...	...	...	...	...	...	...	...
Total	5,068	1,891	1,870	4,724	10	363	6,76	...	1,299

(1) Includes Sabanas police station, Taboga Island, Culebra station, Palo Seco, and Naos Island. (2) Includes Europeans and Asiatics. (3) Includes 64 Panamanians. (4) Includes 29 East Indians. (5) Includes 63 Panamanians. (6) Includes Matachin. (7) Includes Colon Hospital. (8) Includes six Asiatics.

CYLINDRICAL VALVE SEALS.

Recent Modification of Those Used on Canal Locks Lessens Leakage.

A slight modification has recently been made in the seals of the cylindrical valves installed in the locks, which has resulted in a considerable reduction of the leakage found in early tests of these valves.

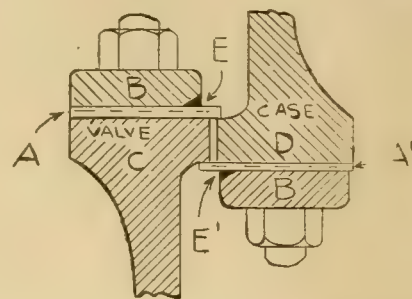
The valve, which was described in THE CANAL RECORD for November 15, 1911, is shown in Sketch A. It consists essentially of a hollow cylinder mounted on a vertical stem and resting, when closed, on a conical seat. When the valve is opened it rises into a concentric case directly above. The opening between the two rings is closed by a pair of leather seals, shown in Sketch B as A and A1, mounted, respectively, on the upperside of the upper flange C of the valve, and the lower side of the lower flange D of the case, when the

size. When a flexible seal is used, the gap will be closed, even though variations in the level of the seal exist.

An investigation of the valve equipped in this manner, however, discloses the fact that although leather is classed as a flexible material it still possesses enough stiffness to hold the valve off its seat when sufficient difference in the level of the flanges C and D exist. The stiffness of the leather is apparent when attempting to bend the material at short radius. In one case the valve was suspended in this manner by the leather seal from 10 to 15 thousandths of an inch above the seat and not touching it at any point. It is obvious that the leakage through this opening under 60 feet head would be excessive.

In order that the leather seal should allow the valve to take a proper seat under the conditions described it was proposed to bevel the

paraffine prepared, as follows: Two parts of neatsfoot oil and one part paraffine are boiled until the paraffine is absorbed by the oil. This solution is then cooled and the leather



SKETCH B—SECTION AT TOP OF VALVE SHOWING SEALS. soaked for about 72 hours, after which period it is found to be soft and pliable and thoroughly saturated with the compound.

Civil Service Examinations.

Examinations will be held, probably on October 27, for the positions of stenographer and typewriter, Isthmian Canal Service; stenographer and typewriter, Philippine Service; and typewriter, Isthmian Canal Service. Persons interested should request a copy of Form 1424, which contains information in regard to the above named examinations.

Applications will not be received after October 2; this date may be changed if necessary.

Competitors in the above named examinations must bring their own typewriting machines to the examination room.

It is to be noted that in answer to questions as to residence, applicants must show such residence in a State or Territory of the United States, and county thereof, up to the time of filing application.

ISTHMIAN CIVIL SERVICE BOARD.

Culebra, C. Z., September 14, 1912.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending September 21:

DATE.	Hours worked.	Cubic Yard.
September 16.....	2.00	328
September 17.....	8.40	451
September 18.....	7.10	394
September 19.....	6.25	522
September 20.....	6.10	330
September 21.....	4.20	442
Total.....	34.45	2,467

Missing Men.

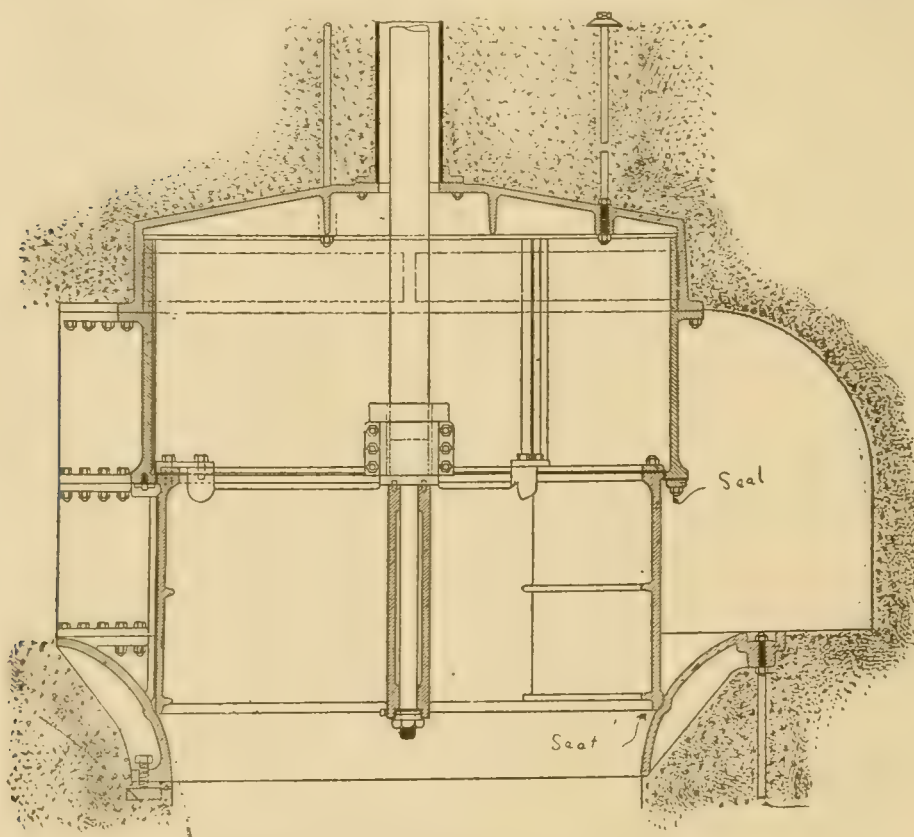
Any one having information regarding the whereabouts of Jacob Tschop, a machinist by trade, and supposed to be on the Isthmus, is requested to communicate with the American Legation, Panama.

Any one having information regarding J. T. Sullivan, formerly of Black Bayou, La., who is supposed to be on the Isthmus, is requested to communicate with THE CANAL RECORD.

Anyone having information regarding the address of John G. Tobias, formerly of Lincoln, Nebraska, and who is supposed to have come to the Isthmus to work, is requested to communicate with the Director of Posts, Ancon.

Married.

O'CONNOR-PETERS—At Frijoles, on Sunday, September 15, Miss Nina Dorothea Peters to Mr. William Francis O'Connor, both of Empire, Rev. Carl H. Elliott officiating.



SKETCH A—SECTION THROUGH CYLINDRICAL VALVE.
(From The Canal Record, November 15, 1911.)

Diameter of outlet from central culvert $4\frac{1}{2}$ feet; of outlet under valve $6\frac{1}{2}$ feet; of movable cylinder of valve 7 feet $1\frac{1}{2}$ inches.

valve is down. The seal consists of a leather washer made up in sections of leather one-fourth inch thick and held down by segmental plates B and B1 bolted to the flange. The leather projects eleven thirty-seconds of an inch beyond the flange, and, normally, one-fourth inch of the leather makes contact with the opposite flange. This distance may vary by plus or minus three thirty-seconds of an inch which is the radial clearance of the valve and case.

A flexible seal is used at the top of the valve, because if a solid contact was used at both top and bottom it would be practically impossible to have both tight at the same time on account of mechanical irregularities, which are likely to exist in machined parts of this

edge of the segmental plate nearest the free end of the leather seal, thus allowing the leather to bend at an increased radius for a given irregularity of the flanges. This was accordingly done on the valve previously tested. The plates were removed, beveled at E and E1, and again put in place. Leakage tests, made after this modification was completed, showed a leakage under 60 feet head of .014 cubic feet per second, which is a vast improvement over the previous tests, which showed leakage in excess of .5 cubic feet per second. All valves of this type are accordingly being modified in the manner described.

In order to soften the leather seals as much as possible, the seals are being removed and treated with a mixture of neatsfoot oil and

SPILLWAY CAISSON DAM.

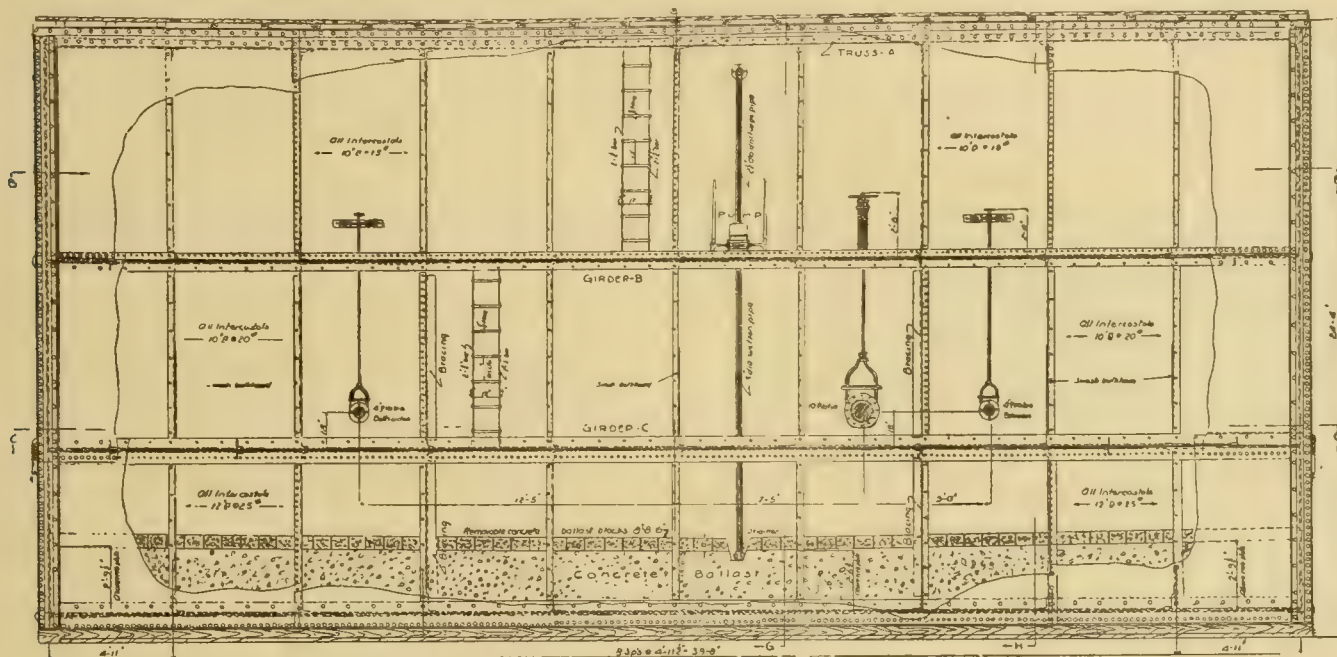
Floating Caisson for Spillways of Gatun and Miraflores Lakes.

Enough of the material for the floating caisson for Gatun Dam Spillway has arrived on the Isthmus from the United States to allow the contractors for its fabrication and erection, the McClintic-Marshall Construction Company, to begin the erection within a short time. Inasmuch as the caisson will not be required until after the coming dry season,

The pressure of backwater having been relieved, the caisson will be pumped out and floated away.

In outward appearance the caisson will be a simple rectangular box. The framework, consisting of vertical and horizontal girders, supporting a system of intercostals to form the skeleton, will be covered on both sides with steel sheathing plates, so as to form a watertight box into which will be put a sufficient amount of concrete ballast to cause it

long, by four feet three inches wide, with web plates $\frac{1}{2}$ -inch thick. They will be bolted at the ends to the two vertical girders, 22 feet six inches long, five feet nine and a half inches wide, and $\frac{1}{2}$ -inch thick in the web; and each of the three long spaces thus formed will be crossed at right angles by nine vertical intercostal plates, $\frac{3}{8}$ -inch thick. This skeleton is designed to withstand a maximum head of 22 feet. The sheathing will vary in thickness according to the pressure on it, from $\frac{3}{8}$ to 7-16 of an inch.



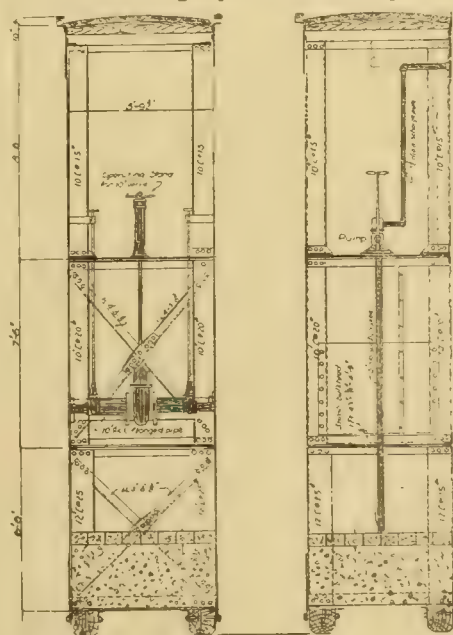
SKETCH A—SIDE ELEVATION OF SPILLWAY CAISSON WITH SHEATHING REMOVED.

it will be erected at an elevation between 55 and 60 feet above sealevel, on the lake side of the east wing of the Dam, there being ample time to complete the caisson before the rise of the lake surface above elevation plus 50 feet; while shortly after the Spillway gates have been closed, further to raise the lake, the caisson can be floated off and held ready for service.

The caisson is to be used as a temporary dam for the passages between piers of the Spillway dam, when it is desired to repair the Stoney gates by which the passages will ordinarily be controlled to regulate the surface of the lake. When a gate is to be repaired, the caisson will be towed from its moorings at the side of the Spillway, and swung into place between the piers supporting that gate. Water will be let into the caisson through intakes below the water line until it sinks into position on top of the ogee and against the vertical seats provided on either side. The downstream side of the caisson will then be six feet six and three-fourths inches from the face of the gate. After the placing of the caisson, the gate will be raised slightly to unwater the space between it and the caisson. This will cause a heavy pressure from the lake on the caisson, forcing it more tightly in place, and will afford room for workmen to operate on the upstream side of the gate.

When it is desired to remove the caisson the gate will be lowered and the space between it and the caisson will be filled with water, to the level of the lake, through a pipe passing through the caisson and controlled by a valve.

to float upright and at the proper depth in the water. Timber keels and side sills are provided to make tight joints with the ogee be-



SKETCH B—SECTIONS SHOWING OPERATING STAND FOR 10-INCH VALVE (H-H), AND PUMP (G-G.)

tween piers and the vertical seats against which the caisson will rest when in use.

The horizontal girders, three in number, and the top truss will be 49 feet six inches

All of this material will be of specially tested structural steel.

For ballast, concrete will be laid approximately two feet six inches deep over the entire bottom girder, with a slight grade toward a sump near the center. A number of movable concrete blocks, eight inches square by six inches deep, will be placed on top of this as a means of adjusting the ballast.

The pipes for letting water into the caisson are located above the second girder, holes in which will allow the water to drain to the bottom. These pipes are two in number, four inches in diameter, and controlled by long-stemmed valves operated from the girder above. Swash bulkheads will minimize the rolling of the water within the caisson, assuring steadiness. The flange pipe, through which water will be let into the space between caisson and gate, at the conclusion of repairs to the latter, is at the same level as the filling pipes and between them. It will be 10 inches in diameter, of cast iron, and controlled by an extension valve similar to those for the filling pipes.

The pumps for unwatering the caisson, to float it, is to be of the horizontal force type, hand operated by two handles. It will have a 6-inch stroke, and will draw water from the sump in the ballast through a 3-inch suction pipe and force it out through a 2 $\frac{1}{2}$ -inch discharge pipe, emptying through the side of the caisson about a foot below the top. When the caisson is sunk in place on its seat, its top will be two feet eight inches above the surface of the lake at the maximum elevation of 87 feet above sealevel. The arrangement of pump and

valves, and of other details of construction, is shown in the accompanying diagrams.

Trap doors and ladders will be provided to allow workmen access to the interior of the caisson. The top truss will be decked over with yellow pine lumber; and the keels and end sills will be of white oak. The caisson complete will contain approximately 53 tons of structural steel. The caisson for Miraflores spillway will be of identical construction.

PERSONAL.

Lieut.-Col. D. D. Gaillard returned from leave of absence on the *Panama*, which arrived at Cristobal on Friday, September 20. Returning from leave also on the *Panama*, were Mr. George M. Wells, accompanied by his family, and Mr. T. L. Clear.

Silver Medal Shooting Match.

On Sunday, September 22, the Canal Zone Rifle Club held the first of a series of shoots for a silver medal offered by Mr. W. M. Garlington of Colon. The conditions of the match call for 10 shots at the 200-yard and 600-yard ranges, no marking being done until the 10 shots are fired, which makes the contest an unusually difficult and interesting one. The results of Sunday's match, follows:

Ferris.....	83	Hutton.....	62
Walraven.....	81	Hoffman.....	59
Blaisdell.....	80	Kane.....	57
John.....	75	Taylor.....	55
Haynes.....	72	Bernson.....	53
Greene.....	72		

The medal must be won three times, but not necessarily in succession, to become the personal property of the winner.

Notice to Patrons of Gatun High School.

Pupils, resident at Cristobal, who will attend the Gatun high school the coming year, will leave Colon on the 10.30 train. A morning session of the school will open at 11.10, and close at 11.55. The afternoon session will open at 1 o'clock, and close at 3.15, in time for the afternoon train going north.

All pupils attending the Gatun high school should report at the building at 11.10 a. m., October 1, instead of 9 o'clock, as stated in previous announcement.

FRANK A. GAUSE,
Superintendent of Schools.
Ancon, C. Z., September 16, 1912.

Notice of Teachers' Meetings.

White teachers of the public schools will meet at the Ancon white schoolbuilding on Monday, September 30, at 8 a. m.

Colored teachers will meet at the Ancon white schoolbuilding on Monday, September 30, at 2 p. m.

FRANK A. GAUSE,
Superintendent of Schools.
Ancon, C. Z., September 25, 1912.

Levelman and Transitman Examination.

Examination for promotion to the positions of levelman and transitman is scheduled to be held in the Commission clubhouse at Empire, on Sunday, October 20.

The examination will commence promptly at 9 a. m., and will be divided into three parts, which will be given in the order indicated, viz.: Written and oral examination, and a statement of training and experience. Competitors will be required to complete the written portion of the examination before 1 p. m.

Applications for examination should be addressed to the undersigned, through the

head of department or division, before the close of business on October 17.

Competitors should bring to the examination room, pens, pencils, and tables of circular functions and triangles.

No card of admission will be needed.

A. B. NICHOLS,
Chairman, Examining Board.
Culebra, C. Z., September 21, 1912.

Independent Order of Panamanian Kangaroos.

The various subordinate courts of the Independent Order of Panamanian Kangaroos have decided to consolidate into one court, with temporary headquarters at Empire, this consolidation to become effective October 1.

The members of the various courts will meet at Kangaroo Hall, Empire, on Sunday, October 6, at 9.30 a. m., for the purpose of nominating and electing officers to preside over the new court.

Obituary.

Maj. Benjamin Morgan Harrod, a member of the Isthmian Canal Commission from 1904 to 1907, died at his home in New Orleans, La., on September 8, 1912, at the age of 75 years. He was a member of the Louisiana Engineering Society, and at one time, was president of the American Society of Civil Engineers, and of the Harvard Society of Engineers. He was also a member of the Mississippi River Commission, appointed in 1879, to make a survey of the river and its tributaries.

Drowning of Child at Las Cascadas.

Margaret E. Allen, aged three years and four months, daughter of Mr. and Mrs. Harry H. Allen of Las Cascadas, was drowned in a box culvert, containing about four feet of water, near her home, on Monday, September 23. It was raining heavily at the time, and it is supposed that the child, who was playing under the house, stepped into an open drain, and was carried by the rush of water into the culvert.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon, during the week ending September 21: *Turrialba*, September 15, from New York, with 51 kegs iron washers, 20 cases deck brushes, for stock; 31 packages plumbing fittings, for Panama Railroad Company.

Metapan, September 16, from New York, with 12 cases wire, for Mechanical Division; 34 cases graphite, 10 cases chains, 250 kegs spikes, 800 kegs nails, 20 kegs bolts, 13 crates stovepipe, for stock.

Advance, September 17, from New York, with 18 locomotive tires, for Mechanical Division; 50 cases elevator machinery, for Panama Railroad Company; 36 pieces steel beams, for Pacific Division; 120 packages track material, for superintendent of erection; 54 cases bathtubs, for Panama Railroad Company; 47 barrels cement roofing, 300 cases linseed oil, 70 cases varnish, 142 bundles galvanized roofing, 417 bundles shovels, 17 cases brass valves, 17 barrels pipe-fittings, 12 barrels compound, 10 cases spring cutters, 10 crates cans, for stock; and a miscellaneous cargo, the whole consisting of 1,490 packages, weighing 210 tons.

Atenas, September 19, from New Orleans, with 4,213 pieces yellow pine lumber, 307 pieces piling, 2,257 pieces cypress lumber, 30 cases hardware, for stock; 87 pieces white oak lumber, 6,783 pieces yellow pine lumber, 50 barrels brake shoes, for Mechanical Division.

Panama, September 20, from New York, with nine cases rubber boots, for Pacific Division; eight cases rubber boots, for Atlantic Division; 519 pieces knuckles, 14 pieces car couplers, 63 pieces castings, 20 pieces steel beams, for Mechanical Division; 50 cases drugs and sundries, for Sanitary Department; 20 drums calcium chloride, 20 cases varnish, 100 cases linseed oil, 42 cases lanterns, 19 cases babbitt metal, 40 cases concentrated lye, 125 cases soap, 36 pieces steel beams, 104 bales cotton waste, for stock; nine cases marble slabs, for Panama Railroad Company; and a miscellaneous cargo, the whole consisting of 1,800 packages, weighing 250 tons.

COUNT OF MAIL MATTER.

Comparison of Franked and Paid Classes Handled at Canal Zone Post-Offices.

The Division of Posts, Customs and Revenues made a count of all mail matter received, dispatched, and handled in transit on the Canal Zone from August 1 to August 31, 1912, inclusive. During the same period, the postal matter passing under the frank of "Official business" was weighed, and estimates have been prepared to show the revenues that would accrue if such matter were charged the regular rates. A recapitulation of the count follows:

Mail matter dispatched—The total number of letters dispatched from the Canal Zone offices with postage paid was 191,611; papers and packages, 18,642. Official letters dispatched numbered 79,558; packages, 4,263. Paid registered matter included 5,853 pieces; official registered matter, 6,001 pieces. Total, 305,928.

Mail matter received—The total number of paid letters received was 190,239; the number of papers and packages was 135,264. Official letters received numbered 73,376; packages, 5,546. Paid registered letters received amounted to 4,169, official to 5,570. Total, 414,164.

Mail matter in transit—This comprises all classes of mail matter received and dispatched by the exchange offices at Ancon and Cristobal to the cities of Panama and Colon, and to all countries in the Postal Union. Paid letters in this category numbered 87,424; packets, 14,702, in addition to 4,038 sacks of papers and 18,984 single papers. Registered pieces in transit amounted to 12,943. Total 134,053 pieces, and 4,038 sacks of papers. The total number of pieces handled during the month was 858,183.

Official matter—The weight of official matter, including letters and packages, handled during the month was 24,033 pounds. The estimated weight of the 79,558 official letters dispatched is 9,943 pounds, and regular postage on it would have amounted to \$3,181.76. On the 4,263 packages dispatched, with weight of 10,424 pounds, the postage would have been \$1,667.84. Registry fees on 6,001 official registers would have amounted to \$600.10, and the regular postage on the 13,609 pounds which they weighed would have been \$4,354.88. The total revenue from these four sources would have been \$9,804.58.

Women's Clubs.

The Gatun Woman's Club will open its fifth year on Thursday afternoon, October 10. There will be a program presented, which will call for a schedule, as follows: The first Thursday in each month will be a business meeting, with current events; the second meeting in each month will be in the charge of a chairman of one of the four departments, namely, home, literature, educational, and philanthropy. Programs, suitable to the month, will be arranged, as, in November, a program on Thanksgiving customs; in December, on Christmas customs. In February, there will be a patriotic program to celebrate Washington's Birthday; March and April will be general. Provision will be made for speakers, and it is expected that the club will hold the usual teas and social events.

The Corozal Sunday school held a social and cake sale at the recreation hall on Wednesday evening, September 18. A musical and literary program was one of the features. The net receipts amounted to \$55.35.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

Mr. Joseph Page, former secretary of the Y. M. C. A. at Decota, West Virginia, has assumed the duties of secretary at the Porto Bello clubhouse.

Mr. E. J. Schulte, former assistant physical director of the Y. M. C. A. at Lynn, Mass., has begun his work as assistant secretary of the Cristobal clubhouse.

CULEBRA.

The plan of holding moving picture exhibitions in the enlarged room of the schoolhouse at Culebra has been officially approved. Announcement of the next exhibition will be made by bulletin.

The Culebra bowling alleys will be reerected in the rear of the Administration annex, and additional facilities will be procured by connection with that building.

EMPIRE.

Empire bowled the Gorgona team on Saturday, September 21, on the Empire alleys, winning all three games. Following are the scores:

Empire.	Gorgona.
Gustavson... 173 177 152	Simmons... 177 184 156
Potter... 183 162 171	Everet... 127 169 125
Edwards... 146 161 184	Gebbart... 181 159 183
Pearson... 180 154 163	King... 133 155 144
Huson... 184 178 170	Davis... 123 153 147

Total... 866 832 840 741 820 755

The first game in the Isthmian bowling tournament will be bowled on October 5, when Empire will play the Culebra team. Inasmuch as the Culebra team has no home alleys at the present time, they will use the Empire alleys for their tournament games.

Mr. Russell, the assistant secretary, who has been acting secretary at Porto Bello for the last two months, will resume his duties here this week. The regular gymnasium and fencing classes will be started at once.

Sixteen men entered in the local September handicap pool tournament, and eight men in the billiard tournament.

GORGONA.

The following is the standing in the local pool and billiard tournament:

Name.	Won.	Lost.	P. C.
Johnson...	2	0	1,000
Harter...	4	1	800
Walcut...	3	3	500
Robitoy...	1	1	500
Means...	0	2	500

A special musical service will be held at the Gorgona clubhouse on September 28. The service begins at 7 promptly. Every one in Gorgona is invited.

The bowling alleys will soon be in good condition. The league will open on the first Saturday in October. All who wish to join a male quartet, or glee club, are requested to hand their names to the secretary.

GATUN.

The work of shellacking the bowling alleys, which were recently replaned, was begun on Saturday, September 21. It is expected that they will be ready the latter part of this week, when an "Opening" will be held. Several new tenpin halls were received on the last boat. When the Isthmian tournament opens on October 5, Gatun will play at Cristobal.

A beginners' class in Spanish will be started on Wednesday, September 25, which will furnish a good opportunity to acquire a working knowledge of the language. The course runs for 10 lessons. The charge is \$2.50. Any member may join. An advanced class also starts on September 25.

Mr. Pearson of Empire having failed to appear for the final game of pool with Mr. DePoorter of Gatun on Saturday night, September 21, the latter will be declared champion pool player of the Isthmus and will receive a handsome gold medal. The Gatun clubhouse challenges all other clubhouses on the Isthmus to a match game of pool or billiards, or both, the team to consist of any number of men desired.

At the "Open house" held on Saturday evening, September 21, music was furnished by the McClintic-Marshall fire and drum club and the commissary mandolin club.

Forty new books were received from the United

States during the past week, and placed on the shelves for circulation.

There is still an opportunity for those desiring to join the class in shorthand, which meets every Tuesday night.

CRISTOBAL.

Regular basketball practice will be held Tuesday and Thursday evenings. All interested are urged to attend.

The "Married Folks" duckpin tournament held on Saturday night, September 21, was won by Mr. and Mrs. W. J. Burn. The prize was a handsome gold medal. Scores were, as follows:

Name.	1	2	3	Total.
Mr. and Mrs. Burn...	175	152	167	494
Mr. and Mrs. Cotton...	154	147	157	458
Mr. and Mrs. Bell...	144	154	153	451
Mr. and Mrs. Burrell...	139	161	144	444
Mr. and Mrs. Landers...	144	161	137	442

There will be another tournament of this kind on October 2. All interested are invited to participate.

The Isthmian bowling league opens October 5, with Gatun bowling at Cristobal. All bowling fans are invited to attend.

Rainfall from September 1 to 21, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	1.29	13	4.38
Balboa.....	1.76	13	5.26
*Miraflores.....	2.01	2	7.84
Pedro Miguel.....	1.25	13	4.71
Rio Grande.....	3.27	21	8.26
<i>Central Section—</i>			
Culebra.....	2.65	21	8.00
*Camacho.....	1.26	16	4.71
Empire.....	2.23	21	8.54
Gamboa.....	1.67	21	7.07
*Juan Mina.....	1.49	6	7.11
Alhajuela.....	1.06	15	3.97
*El Vigia.....	.94	17	4.04
*Gorgona.....	1.00	3	5.19
*Frijoles.....	3.25	2	9.32
*Monte Lirio.....	1.40	14	6.40
<i>Atlantic Section—</i>			
Gatun.....	2.45	2	7.24
*Brazos Brook.....	2.72	3	8.26
Colon.....	2.13	2	10.80
Porto Bello.....	4.02	14	11.97

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., September 20.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, September 21, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigia.	Alhajuela.	Gamboa.	Gatun Lake.
Sun., Sept. 15.....	130.4	95.4	48.1	43.5
Mon., Sept. 16.....	129.4	95.1	48.4	43.9
Tues., Sept. 17.....	128.8	94.9	49.4	44.3
Wed., Sept. 18.....	127.4	93.8	47.1	44.6
Thurs., Sept. 19.....	129.6	95.1	47.8	44.7
Fri., Sept. 20.....	128.3	94.2	47.6	45.0
Sat., Sept. 21.....	127.0	93.8	47.6	47.6
Height of low water to the nearest foot.....	125.0	91.0	44.0	

LOST—On Sunday, September 15, between New Frijoles and Pohio, a hunting deerhound. Finder will please telephone Gorgona fire station and receive reward.

FOUND—On Panama-Balboa labor train, a leather purse. Address District Sanitary Inspector, Balboa.

OFFICIAL CIRCULARS.

Duty on Imported Articles.

CULEBRA, C. Z., September 17, 1912.

CIRCULAR No. 186-E:

Articles (such as automobiles, motor boats, etc., imported by employes for personal use without payment of duty shall not be sold, transferred, or let for hire by the employe or any agent, to any person not entitled to import such articles free of duty.

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Acting Purchasing Agent on the Isthmus.

CULEBRA, C. Z., September 16, 1912.

CIRCULAR No. 460:

Effective September 15, 1912, and during the absence on leave of Capt. Courtland Nixon, Mr. Charles L. Parker, Assistant Depot Quartermaster, will perform the duties of purchasing agent on the Isthmus.

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Appointment of Senior District Judge for the Canal Zone.

ANCON, C. Z., September 23, 1912.

Joseph B. March is hereby appointed Senior District Judge for the Canal Zone, agreeably to the laws of the Canal Zone, including the Executive Order "Consolidating the administrative district of Gorgona, with that of Empire, and for other purposes," approved by the President on September 12, 1912.

(Signed) M. H. THATCHER,

Head of Department of Civil Administration.

Approved:

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission.

Reopening of Swimming Pool on Colon Beach.

PANAMA RAILROAD COMPANY.

COLON, R. P., September 20, 1912.

TO ALL CONCERNED:

Effective Sunday, September 22, 1912, the swimming pool located on Colon beach will be reopened, and tickets of admittance thereto will be sold at the Washington Hotel, as formerly.

J. A. SMITH, General Superintendent.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending October 2, 1912 (75th meridian time):

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
September 26.....	3.33	9.45	3.50	9.58	
September 27.....	4.02	10.20	4.21	10.32	
September 28.....	4.33	10.52	4.53	11.05	
September 29.....	5.06	11.27	5.26	11.40	
September 30.....		5.40	12.02	6.01	
October 1.....	12.15	6.17	12.42	6.41	
October 2.....	12.56	6.57	1.27	7.27	

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Hotel Tivoli, Ancon, C. Z., Sunday, September 29, 1912, at 8 p. m. The program follows:

1. March—Cavalier (By request).....Harris
2. Selection—The Red Widow.....Gebest
3. Waltz—Tres Jolie.....Waldteufel
4. Overture—If I Were King.....Adam
5. Popular Song—Climb a tree with me.....Harris
6. Grand fantasia—Home, Sweet Home, the World Around (By request).....Lampe
7. Selection—Robin Hood.....De Koven
8. Popular selection—The Broadway Review.....Lampe
9. March—There's a Girl in Havana. Goetz and Sloane

CHARLES E. JENNINGS, Musical Director.

The next concert will be given at Gorgona, C. Z., on Sunday, October 6, at 6 p. m.

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to July 31, 1912, follows:

PERIODS.	Department of Civil Administration.	Department of Law.	Department of Sanitation.	Department of Construction and Engineering.	General Items.	Fortifications.	Total.
Total to June 30, 1909.....	3,427,090.29		9,673,539.28	69,622,561.42	78,022,606.10		160,745,797.09
Total—Fiscal Year, 1910.....	709,351.37		1,863,040.95	26,300,167.05	2,863,088.83		31,675,648.20
Total—Fiscal Year, 1911.....	755,079.44		1,717,792.62	27,477,776.19	3,097,959.72		33,048,607.97
Total—Fiscal Year, 1912.....	820,398.57	24,729.16	1,620,391.12	28,897,738.10	2,819,926.53	1,212,881.66	35,396,665.14
July, 1912.....	63,913.12	1,448.53	123,803.64	2,649,246.61	200,970.55	104,126.92	3,143,509.37
Grand total.....	5,775,832.79	26,177.69	14,938,567.61	154,947,489.37	87,004,551.73	1,317,008.58	264,009,627.77

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning September 23, 1912:

FRESH MEATS.	Price.
Mutton—Stewing per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire forequarter (not trimmed, 10 pounds and over), per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Leg (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	16
Chops, per pound.....	24
Loin for roasting, per pound.....	24
Cutlets, per pound.....	28
Pork—Loin chops or roast, per pound.....	18
Beef—Suet, per pound.....	2
Soup, per pound.....	5
Stew, per pound.....	8
Plate, per pound.....	9
Corned, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Chuck roast (3 pounds and over), per pound.....	12
Pot roast, per pound.....	15
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds), per pound.....	18
Sirloin roast, per pound.....	19
Rump roast, per pound.....	20
Porterhouse roast, per pound.....	20
Steak, chuck, per pound.....	12½
Round, per pound.....	13
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds), per pound.....	20
Tenderloin (Western), per pound.....	25
Venison (Imported) Stew, per pound.....	6
Forequarter (not under 6½ pounds), per pound.....	9
Rack (not under 5½ pounds), per pound.....	20
Saddle (not under 7½ lbs.), per pound.....	20
Leg (not under 9 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
MISCELLANEOUS.	
Pate de Foie Gras, jar.....	55
Livers—Beef, per pound.....	11
Calf, each.....	60
Half, each.....	30
Steak Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	11
Frankfurter, per pound.....	12
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	19
Sweetbreads—Beef, per pound.....	25
Eggs, fresh, dozen.....	135
one-half dozen only.....	118
Bluefish, per pound.....	12
Halibut, fresh, per pound.....	12
Salmon, fresh, per pound.....	22
Fluke, fresh, per pound.....	10
Shads, fresh, each.....	50
Roes, shad, pair.....	25
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds each.....	1.25
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00
Fowls, each.....	1.00
Ducks, (Western, about 4½ pounds,) each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	35
Capons, each.....	2.10
Ducks, blackhead, pair.....	60
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants, per pair.....	1.30
CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound.....	36
Sugar cured, per pound.....	20
Sliced, per pound.....	21
Half, for boiling, per pound.....	22
Boiled, per pound.....	28
Hocks, per pound.....	78
Beef, salt, family, per pound.....	12

Bacon—Breakfast, whole piece, per pound.....	23
sliced, per pound.....	24
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00
Pigs' feet, per pound.....	9
Tongues, per pound.....	18

DAIRY PRODUCTS.	
Butter—Creamery, special, per pound.....	38
Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	45
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Parmesan, per pound.....	35
Edam, tin.....	26
Gouda, per pound.....	10
Milk (Certified), per bottle.....	*20
Butter, bottle.....	*15
Fer-mil-lac, bottle.....	*20
Ice cream, quart.....	725
½ gallon.....	750

VEGETABLES AND FRUITS.	
Beets, per pound.....	4
Celery, per head.....	8
Cabbage, per pound.....	4
Cucumbers, per pound.....	5
Carrots, per pound.....	4
Lettuce, per pound.....	15
Onions, per pound.....	3½
Potatoes, white, per pound.....	3½
sweet, per pound.....	3
Squash, per pound.....	5
Turnips, per pound.....	3
Tomatoes, per pound.....	16
Yams, per pound.....	5
Apples, per pound.....	5
Cantaloupes, each.....	*10
Grapes, per pound.....	*10
Grape Fruit, each.....	4
Lemons, dozen.....	24
Limes, per 100.....	80
Plums, per pound.....	11
Oranges, Jamaica, per dozen.....	12
Pineapples, each.....	12½
Watermelons, each.....	35
Peaches, per pound.....	112

*Indicates reduction from last list.
†Indicates 5 cents allowed for return of bottle.
‡Indicates advance on last list.
††Fowls weigh each about, as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock next lightest weight is supplied and refund note sent for difference.
?Sold only from commissaries; no orders taken for delivery.

Misdirected Letters.

ANCON, C. Z., September 25, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts and may be procured upon request of the addressee:

Beeler, W. D.	LaPoint, W. F.
Burk, Lester O.	Lawson, Mr.
Carroll, Robt.	Mahoney, Tom
Castro, Juan Santiago	McCoy, W. M.
Close, Joseph A.	Miller, F. G. (pkg.)
Coope, Miss Annie	Moore, Frank H. (2)
Curtiss, Clarence Martin	Murray, Frank (2)
DeLancey, J. B.	Patterson, Miss Mae
Dogan, D.	Payne, Percy
Doyle, William James	Quick, Ray Lewis
Dustheiner, Clarence	Reed, Hugh
Elliott, Z. B.	Reese, Daniel
Flynn, P. J.	Swain, John
Griffith, Rev. J. M.	Tostige, Henry
Hansell, B.	Walker, E. F.
Hines, Stanley	West, Miss Annie Langley
Hipon, Ignacio	Wheeler, Malcolm R.
Kimberly, Mrs. Wm. T.	Wise, Jr., William (3)
King, M. P.	Wise, Mrs. May
Lane, Roy G.	

LETTERS UNCALLED FOR SEPTEMBER 18, 1912.

Bailey, Donald	Hanson, Miss Berenice E.
Bell, Eustace	Jimenez, Roberto A
Burk, Lester O.	Jones, Miss Laura
Cameron, Mrs. Robert	Kitchen, F. L.
Carvallis, Carlos	Lundie, Robert
Case, Adelbert	Newbale, Michael
Cough, W. S.	Prentiss, James
Dec, Thomas	Reichenback, George
DeLancey, J. B.	Rowe, Alfred
Elms, Mrs. Byron	Shepard, Frederick
Faunce, V. P.	Talur, Mrs. Oliver
Gaeb, Mrs. H.	Thomas, Miss Minnie
Grant, Wm.	Wilkins, H. E.
Griset, Leon	Williamson, Mrs. P.

Sale of Public Buildings at Cucaracha.

OFFICE OF THE CHIEF QUARTERMASTER.

CULEBRA, C. Z., September 16, 1912.

Sealed proposals will be received at this office until 3 p. m., Monday, September 30, 1912, and then opened, for the purchase of any or all of four buildings located at Cucaracha. Number of buildings and full information will be furnished upon application to any District Quartermaster, or to this office. Proposals must be accompanied by five per centum (5%) of amount bid. Envelopes containing proposals should be endorsed "Proposals for purchase of buildings" and addressed to Capt. R. E. Wood, Acting Chief Quartermaster, Culebra, Canal Zone.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Allianca.....	P. R. R. Friday.....	Sept. 20
Colon.....	P. R. R. Friday.....	Sept. 27
Advance.....	P. R. R. Thursday.....	Oct. 3
Panama.....	P. R. R. Wednesday.....	Oct. 9
Allianca.....	P. R. R. Tuesday.....	Oct. 15
Colon.....	P. R. R. Monday.....	Oct. 21
Advance.....	P. R. R. Saturday.....	Oct. 26
Panama.....	P. R. R. Saturday.....	Nov. 2

CRISTOBAL TO NEW YORK.

Panama.....	P. R. R. Friday.....	Sept. 27
Allianca.....	P. R. R. Thursday.....	Oct. 3
Colon.....	P. R. R. Wednesday.....	Oct. 9
Advance.....	P. R. R. Tuesday.....	Oct. 15
Panama.....	P. R. R. Monday.....	Oct. 21
Allianca.....	P. R. R. Sunday.....	Oct. 27
Colon.....	P. R. R. Saturday.....	Nov. 2

NEW YORK TO COLON.

Zacapa.....	U. F. C. Wednesday.....	Sept. 18
Sixaola.....	U. F. C. Saturday.....	Sept. 21
Prinz Joachim.....	H.-A. Saturday.....	Sept. 21
Almirante.....	U. F. C. Wednesday.....	Sept. 20
Magdalena.....	R. M. Saturday.....	Sept. 28
Prinz Eitel Friedrich.....	H.-A. Saturday.....	Sept. 28
Carrillo.....	U. F. C. Saturday.....	Sept. 28
Santa Marta.....	U. F. C. Wednesday.....	Oct. 2
Prinz August Wilhelm.....	H.-A. Saturday.....	Oct. 5
Turrialba.....	U. F. C. Saturday.....	Oct. 5
Metapan.....	U. F. C. Wednesday.....	Oct. 9
Tivives.....	U. F. C. Saturday.....	Oct. 12
Clyde.....	H.-A. Saturday.....	Oct. 12
Prinz Sigismund.....	H.-A. Saturday.....	Oct. 12
Zacapa.....	U. F. C. Wednesday.....	Oct. 16

COLON TO NEW YORK.

Metapan.....	U. F. C. Thursday.....	Sept. 26
Prinz Sigismund.....	H.-A. Monday.....	Sept. 30
Clyde.....	R. M. Tuesday.....	Oct. 1
Tivives.....	U. F. C. Saturday.....	Oct. 1
Zacapa.....	U. F. C. Thursday.....	Oct. 3
Prinz Joachim.....	H.-A. Monday.....	Oct. 7
Sixaola.....	U. F. C. Tuesday.....	Oct. 8
Almirante.....	U. F. C. Thursday.....	Oct. 10
Prinz Eitel Friedrich.....	H.-A. Monday.....	Oct. 14
Carrillo.....	U. F. C. Tuesday.....	Oct. 15
Oruba.....	R. M. Tuesday.....	Oct. 15

NEW ORLEANS TO COLON.

Parismina.....	U. F. C. Saturday.....	Sept. 21
Cartago.....	U. F. C. Saturday.....	Sept. 28
Heredia.....	U. F. C. Wednesday.....	Oct. 2
Atenas.....	U. F. C. Saturday.....	Oct. 5
Heredia.....	U. F. C. Wednesday.....	Oct. 9
Parismina.....	U. F. C. Saturday.....	Oct. 12
Abangarez.....	U. F. C. Saturday.....	Oct. 19
Cartago.....	U. F. C. Wednesday.....	Oct. 23

COLON TO NEW ORLEANS.

Atenas.....	U. F. C. Thursday.....	Sept. 26
Heredia.....	U. F. C. Thursday.....	Sept. 26
Parismina.....	U. F. C. Thursday.....	Oct. 3
Cartago.....	U. F. C. Thursday.....	Oct. 10
Atenas.....	U. F. C. Thursday.....	Oct. 17
Parismina.....	U. F. C. Thursday.....	Oct. 24
Abangarez.....	U. F. C. Thursday.....	Oct. 31
Cartago.....	U. F. C. Thursday.....	Oct. 31

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston at 10 a. m., on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* sail at 2 p. m., and call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending September 21:

Arrivals—September 15, *Cordelia*, from Port Harford; September 15, *Quito*, from Guayaquil; September 16, *Guatemala*, from Callao; September 16, *Peru*, from Guayaquil; September 17, *Ucayali*, from Callao; September 20, *Acapulco*, from San Francisco; September 20, *Stanley Dollar*, from San Francisco.

Departures—September 17, *Mantaro*, to Callao; September 17, *Palena*, to Valparaiso; September 18, *Cordelia*, to Port Harford; September 20, *City of Sydney*, to San Francisco.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, OCTOBER 2, 1912.

No. 6.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Pipeline Along Naos Island Breakwater.

The outer end of Naos Island breakwater is within 500 feet of the island, and the Division of Fortifications has begun the laying of a 4-inch pipeline to supply water for the work of construction on the adjacent islands of Perico and Flamenco. Clapets have been used heretofore, hauling water from Balboa. The pipeline will connect with the Ancon-Balboa main near the bridge across the estuary between the East Balboa hotel and the commissary, and will extend across completed dumps at Balboa and along the breakwater track. It will be 17,050 feet in length, and will be capable of delivering at least 100,000 gallons of water per day at Naos Island.

Protecting Culebra Cut from Flooding.

To protect Culebra Cut from inundation by the Chagres River, in consequence of the rise of Gatun Lake, the dike at Gamboa is being raised and strengthened. Earth and rock will also be dumped at a point about a thousand feet south, where the Camacho Diversion, passing under the Panama railroad, strikes at right angles a barrier separating it from the Canal channel. Both dikes will be carried to 78.2 feet above sealevel, and the one across the Canal will be widened approximately 40 feet. The tops of the dikes before the beginning of these operations were 73 feet above sealevel.

Rebuilding of Dredge "No. 85."

The hull of pipeline suction dredge *No. 85* was successfully launched from the shipways at Balboa on Monday afternoon, September 30. This dredge, which was formerly engaged in the hydraulic fill at Gatun Dam, was dismantled about two months ago and shipped to Balboa in sections. The work of putting the hull together has taken about six weeks, and it is expected that within another month, its upper works will have been replaced, when the dredge will again

be ready for service. It will be put to work excavating for the new inner harbor at Balboa, the material from which will be used in filling in the low area on the west side of the Panama railroad, between Corozal hill, and the Balboa wye.

Dock Changes at Balboa.

The remainder of the Panama railroad lumber dock at Balboa, a part of which collapsed on August 17, is being removed. Additional cracks developed at the north end of the wharf early last month, making it unsafe for further use, and the two cranes stationed thereon were at once dismantled and removed from the zone of danger. Most of the lumber in the old wharf is being utilized in the construction of a shed over the cement dock, which is now used regularly by Pacific coast steamers, in taking on and discharging cargo. The cement dock is 656 feet long, and will be covered for practically its entire length. The substructure of this dock recently moved slightly channelward in one or two places, due to the pressure against it of the adjoining land fill. Further movement has been stayed by installing anchor rods fastened to the caissons by steel clamps, the outer ends being embedded in solid concrete bases.

Buildings Along Zone Boundary Road.

Affecting the erection of buildings along the Panama side of the Ancon-Balboa road, between its juncture with the Panama-Balboa road, and the Ancon post-office, the municipal council of Panama has ordained that such buildings shall not extend beyond the alignment marked out by the buildings of the National Institute, and the sidewalks shall have the same width as those of the National Institute on that road. This provides that the sidewalks shall be at least eight feet wide.

Transfer of Compressors to Balboa.

In the transfer of the two air compressors in the plant at Las Cascadas, and the boilers from which they are supplied with steam, to the Balboa power plant, referred to in THE CANAL RECORD of August 28, 1912, one compressor and one boiler will be installed at the Balboa plant within a week; and the other compressor, with two more boilers, is to be transferred by the first of January. Each compressor is capable of compressing 2,500 cubic feet a minute from atmosphere to a pressure of 100 pounds to the square inch, and is driven by a double-cylinder simple engine of 250-horsepower.

The plant can be spared from Las Cascadas on account of the advance of excavation in Culebra Cut. The air mains, which extend the length of the Cut, will then be supplied by the plants at Empire and Rio Grande. The Balboa plant has been using two compressors heretofore, supplying the Ancon quarry through an 8-inch main, and the Balboa

shops through a 6-inch main, crossing the saddle between Sosa High and Sosa Low. The new compressors will be used principally for drills in the excavation for the permanent terminals, which will be supplied through 6-inch mains, skirting both sides of the Sosa hills. They will be installed in the present boiler room of the Balboa plant, requiring no extension of the building, except a small shed.

Erection of Hydroelectric Plant at Gatun.

Operations have begun for the erection of the permanent hydroelectric station at the Spillway of Gatun Dam. Excavation for the turbine pits, close by the Spillway discharge channel, on the east side, has been carried to 5.25 feet below sealevel, over an area of 100 by 30 feet. The sheet steel penstocks are being assembled on the north toe of Gatun Dam, near the Spillway. The penstocks, of which there will be three, with provision for the installation of three more, if desired, will each be 10 feet six inches in diameter, of $\frac{3}{4}$ -inch steel, banded at intervals of eight feet with 3-inch by $\frac{3}{4}$ -inch Z-bars, all set in concrete. The center of intakes will be at elevation plus 68.25, and their discharges into the turbines at elevation plus 27. When Gatun Lake is at its normal level of 85 feet above sealevel the effective head on the turbines will be 77 feet.

Specifications for 350 tons of structural steel for the buildings of the plant have been sent to the General Purchasing Officer for advertisement. The specifications provide for the erection of the steel, either by the contractor, or by the Isthmian Canal Commission. It is expected that the laying of concrete for the foundations of the building and turbines will be begun about the middle of October.

Progress in Erection of Lock Gates.

Following the completion of erection and sheathing for the gates in the upper level of Gatun Locks, the erection bridge, which was employed on that level, is being moved to the middle level. No gate erection has been done in the middle lock, the bridge which is being moved to it having so far been used only for the upper lock, and the second bridge, which was set up across the lower lock in April, 1912, has been used only on that level. The west span of the upper level bridge has been moved, and the east span is to follow during this week. It has been found unnecessary to dismantle the bridge, the ends of the spans being set on trucks and rolled down the inclines of the walls.

The upper guard gates at Gatun Locks are being equipped with footwalks and handrails across the tops, and will shortly be ready for the use of the public in crossing the chambers.

At Miraflores Locks, the skeletons of the upper guard gates have been brought to full height, with the exception of the top girders.

(Continued.)

Over 87 per cent of the concrete for the system of two twin locks at Miraflores was in place September 28, the total amount on that date being 1,233,852 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each working day last week, follows:

EXECUTIVE ORDER

Consolidating the Administrative District of Gorgona with that of Empire, and for other purposes.

By virtue of the authority vested in me I hereby establish the following Order for the Canal Zone:

Section 1. The Administrative District of Emperador shall be known hereafter as the Administrative District of Empire, and the town of Empire shall be the head of the District.

Section 2. The Administrative District of Gorgona is hereby abolished, and the territory heretofore embraced in said District is incorporated into the Administrative District of Empire for all judicial, administrative, and political purposes.

Section 3. The District Court of Gorgona is hereby abolished, and all cases, civil or criminal, pending in said Court, at the time this Order takes effect are transferred to the District Court of Empire, to be tried and disposed of in said court in like manner and form as if they had been originally instituted therein, without prejudice to any rulings or orders that may have been previously made in said cases by the District Court of Gorgona; and all process issued in said cases made returnable to the District Court of Gorgona shall be returnable to the District Court of Empire, and the records and files of the District Court of Gorgona shall be transferred to and become a part of the records and files of the District Court of Empire as soon as this Order takes effect.

Section 4. If at any time it is impracticable to assign a District Judge of one district to hold the court of another District Judge, the Head of the Department of Civil Administration, with the approval of the Chairman of the Isthmian Canal Commission, shall appoint some competent person to act as a special judge to hold such court until the regular judge thereof returns to his duties, or one of the District Judges is assigned to such court under the existing laws. Any person appointed special judge hereunder, while serving in that capacity shall receive compensation for his services at the same rate as that paid to the regular district judge.

Section 5. The powers and duties heretofore vested in and imposed on the administrative officers of the District of Gorgona are hereby transferred to the corresponding administrative officials, respectively, in the District of Empire, together with the records and files belonging to such officers.

Section 6. The areas of Gatun Lake lying outside of the east and west lines of the Canal Zone proper (original ten mile strip) and the lands adjacent to said areas up to contour lines of one hundred feet above mean sea level, are hereby included in the present Cristobal Administrative District, and the Third Judicial Circuit, for all judicial, administrative and political purposes; except, that part of the Chagres and its confluences from the point where the said river intersects the eastern line of the Canal Zone proper, thence to the eastward up to contour lines of one hundred feet above mean sea level, which shall be included in the Administrative District of Empire and in the Second Judicial Circuit for such purposes.

Section 7. All laws and orders or parts thereof in conflict with this Order are hereby repealed.

Section 8. This Order shall take effect ten

days from and after this date; provided, that the office of senior District Judge in accordance with the preexisting laws shall continue until December 31, 1912, at which date the said office shall cease to exist,—and provided further, that nothing in this Order shall be construed to deprive any judicial or administrative officer of the District of Gorgona as now formed, of leave of absence with pay that may be due him when this Order takes effect.

WM. H. TAFT.

THE WHITE HOUSE,
September 12, 1912.

[No. 1605.]

PERSONAL.

Mr. Charles E. Weidman sailed on Tuesday, October 1, on the United Fruit Company's steamer *Tivives* for Kingston, Jamaica, and from there sails on the steamer *Zacapa* for New York, on his annual leave of absence.

Married.

HOFFMAN-BENDER—At Empire, on Saturday, September 21, Geta Fae Bender of Empire, to Warren Engle Hoffman of Empire, the Rev. A. A. Nellis officiating. Canal Zone residence, Empire.

SJOBLOM-RUDER—At Cristobal, on Thursday, September 26, Clara Rose Ruder of Chicago, Ill., to Axel Theodore Sjoblom of Culebra, the Rev. A. A. Nellis officiating. Canal Zone residence, Culebra.

SULLIVAN-SKELTON—At Culebra, on Monday, September 23, Marie Elizabeth Skelton of St. Paul, Minnesota, to James Alexander Sullivan of Seattle, Washington, the Rev. Father Collins officiating. Canal Zone residence, Culebra.

Rainfall from September 1 to 28, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	2.42	26	8.19
Balboa.....	2.22	26	9.80
*Miraflores.....	3.65	27	13.70
Pedro Miguel.....	3.06	26	9.27
Rio Grande.....	3.51	26	14.15
<i>Central Section—</i>			
Culebra.....	2.65	21	12.46
*Camacho.....	4.17	22	13.84
Empire.....	2.44	23	12.96
Gamboa.....	1.67	21	10.55
*Juan Mina.....	2.40	25	12.38
Alhajuela.....	1.19	26	8.17
*El Vigia.....	1.98	23	8.35
*Gorgona.....	2.20	23	9.81
*Frijoles.....	3.25	2	11.20
*Monte Lirio.....	1.46	14	8.60
<i>Atlantic Section—</i>			
Gatun.....	2.45	2	7.83
*Brazos Brook.....	2.72	3	9.02
Colon.....	2.13	2	11.62
Porto Bello.....	4.02	14	†14.94

*Standard rain gage—readings at 5 p. m. daily
Automatic rain gage at unstarred stations—values
midnight to midnight. †To 5 p. m., September 27.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, September 28, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigia.	Alhajuela.	Gamboa.	Gatun Lake.
Sun., Sept. 22.....	126.8	93.2	47.6	45.5
Mon., Sept. 23.....	129.5	95.0	49.8	45.8
Tues., Sept. 24.....	133.2	97.7	51.8	46.3
Wed., Sept. 25.....	130.1	96.3	51.6	46.8
Thurs., Sept. 26.....	128.0	94.2	48.8	47.2
Fri., Sept. 27.....	127.5	93.6	48.6	47.5
Sat., Sept. 28.....	127.4	93.6	48.2	47.7
Height of low water to the nearest foot.....	125.0	91.0	44.0	

FUNDS FOR CANAL WORK.

Appropriations for Fiscal Year 1912-13 for Various Departments, and for Fortifications.

Provision for carrying on work on the Canal, and of the fortifications, and the armament thereof, during the fiscal year ending June 30, 1913, was made in the Sundry Civil Act, approved August 24, 1912. The appropriation for the Canal work amounts to \$28,980,000, divided into the following items:

Salaries of officers and employees in the United States.....	\$150,000
Incidental expenses in the United States..	50,000
Salaries of members of the Canal Commission, and officers and employees on the Isthmus, other than skilled and unskilled labor, in the departments of construction and engineering, quartermaster's, subsistence, disbursements, and examination of accounts.....	3,000,000
Skilled and unskilled labor on the Isthmus in the departments of construction and engineering, quartermaster's, subsistence, disbursements, and examination of accounts.....	11,000,000
Material, supplies, and equipment, and other expenses not in the United States, including not exceeding \$50,000 for the payment of damages caused to the owners of private lands, or private property of any kind, for the departments of construction and engineering, quartermaster's subsistence, disbursements, and examination of accounts.....	12,000,000
Miscellaneous expenditures, including recruiting and repatriation of laborers, and all other incidental and contingent expenses not otherwise provided for in the departments of construction and engineering, quartermaster's, subsistence, disbursements, and examination of accounts.....	790,000
Salary of member of the Canal Commission in charge of the Department of Civil Administration, and of the officers and employees, other than skilled and unskilled labor, in the departments of civil administration and law.....	500,000
Skilled and unskilled labor in the Department of Civil Administration.....	15,000
Material, supplies, etc., and contingent expenses of the departments of civil administration and law.....	75,000
Salary of member of the Canal Commission in charge, and of officers and employees, other than skilled and unskilled labor, of the Department of Sanitation on the Isthmus, including those temporarily detailed for duty away from the Isthmus.....	700,000
Skilled and unskilled labor of every grade and kind, for the Department of Sanitation on the Isthmus.....	200,000
Material, supplies, etc., and contingent expenses of the Department of Sanitation on the Isthmus: Provided, That no part of this appropriation shall be used for or toward the construction of a new quarantine station.....	500,000
Total.....	\$28,980,000

The foregoing sums, so far as necessary, shall be available for necessary drydock, coaling plant, shops, and other facilities for repairing and supplying vessels and necessary wharves, sheds, and other terminal facilities, and for the consolidation and preservation of the files of papers and other records which have accumulated or may accumulate during the construction of the Canal.

The entire appropriation is available until expended, and in cases of emergencies arising subsequent to and unforeseen at the time of submitting the annual estimates to Congress, 10 per cent of the foregoing amounts shall be available interchangeably for expenditure on objects named, but not more than 10 per cent shall be added to any one item of the appropriation.

It is directed that all expenditures under this appropriation, including construction of

drydock, coaling plant, shops, and other facilities, but exclusive of fortifications, shall be paid out of the proceeds, derived from the sale of Canal bonds, and that no part shall be applied to the payment of allowances for longevity service or layover days, other than such as may have accumulated prior to July 1, 1909.

FORTIFICATIONS.

The appropriation for continuing the work of fortifying the Canal, and for providing the armament thereof, amounts to \$2,806,950, and is divided, as follows:

SURVEYS.

For detailed surveys of the areas on the Canal Zone, required for military purposes, including the cost of marking permanently the boundaries of such areas... \$ 50,000

CAUSEWAY.

For the construction of a causeway, or bridge, for use in connection with fortifications, Isthmian Canal..... 150,000

SEACOAST BATTERIES.

For construction of seacoast batteries on the Canal Zone, and any balances of the appropriation for the construction of seacoast batteries on the Canal Zone, made by the Act of March 4, 1911..... 1,000,000

SUBMARINE MINE STRUCTURES.

For the construction of mining casemates, cable galleries, torpedo storehouses, tanks, and other structures necessary for the operation, preservation, and care of submarine mines, and their accessories, on the Canal Zone..... 220,200

FIELD FORTIFICATIONS AND CAMPS.

For the construction of field fortifications and the preparation of camp sites on the Canal Zone..... 200,000

ARMAMENT OF FORTIFICATIONS.

For the purchase, manufacture, and test of seacoast cannon for coast defense, including their carriages, sights, implements, equipments, and the machinery necessary for the manufacture at the arsenals, to cost ultimately not to exceed \$2,324,000..... 500,000

For the purchase, manufacture, and test of ammunition for seacoast cannon, including the necessary experiments in connection therewith, and the machinery necessary for its manufacture at the arsenals..... 575,000

SUBMARINE MINES.

For the purchase of submarine mines, and the necessary appliances to operate them for closing the channel leading to the Isthmian Canal..... 111,750

Total..... \$2,806,950

CANAL ZONE FUNDS.

Section 2 of the Act provides that "All funds collected by the Government of the Canal Zone from rentals of public lands and buildings in the Canal Zone, and the cities of Panama and Colon; and from the Zone postal service; and from court fines and fees; and collected or raised by taxation in whatever form under the laws of the Government of the Canal Zone, are hereby appropriated until and including June 30, 1913, as follows: The revenues derived from the postal service to the maintenance of that service; the remaining revenues, including any balances unexpended in prior years, after setting aside a miscellaneous and contingent fund of not exceeding \$10,000, to the maintenance of the public school system in the Zone; to the construction and maintenance of public improvements within the Zone; to the maintenance of the administrative districts; to the maintenance of Canal Zone charity patients in the hospitals of the Isthmian Canal Commission, and to the maintenance of administrative district prisoners. A detailed and classified statement of all receipts and expenditures, without

the duplication of items under this paragraph, shall be submitted to Congress after the close of the fiscal year 1913."

SALE OF MATERIAL, BUILDINGS, ETC.

"Section 3. All funds realized during the fiscal year 1913 by the Isthmian Canal Commission from the performance of services by the Commission or from rentals, or from the sale of materials and supplies under the custody and control of the Commission, are appropriated for expenditure under any of the foregoing classified appropriations for the Department of Construction and Engineering, and a full and separate report in detail of all transactions under this section shall be made to Congress. That until the close of the fiscal year 1913, when any material, supplies, and equipment heretofore or hereafter purchased or acquired for the construction of the Isthmian Canal is no longer needed, or is no longer serviceable, it may be sold in such a manner as the President may direct, and without advertising in such classes of cases as may be authorized by him; and the President is authorized, in his discretion, to sell and convey to the Republic of Panama the building situated in the city of Panama known as 'the Administration Building,' together with the ground on which the same is located, for a sum of not less than \$80,000, and the proceeds of such sale, if made, shall be covered into the Treasury of the United States."

TORO POINT LIGHT.

"Section 4. That hereafter no payments shall be made for maintenance, or other charges, in connection with the Toro Point light, Isthmus of Panama, out of moneys of the United States, or of the Panama Railroad Company."

DIVISION OF RECORDS.

"Section 5. The Chairman of the Isthmian Canal Commission is authorized to establish a division of records, and, as the requirements of the service permit, to consolidate in the custody thereof the files of papers and other records which have accumulated, or may accumulate during the period of the construction of the Isthmian Canal; and he is directed to carefully preserve, properly index, and arrange for use all papers needed or useful in the transaction of current business, or having a permanent value or historical interest; and he is authorized to destroy, or otherwise dispose of, duplications in the files and other papers, which are not needed or useful in the transaction of current business, and have no permanent value or historical interest, and which have been recommended to him for destruction, or other disposition, by a committee of three competent persons, who have personally examined the papers, and in connection with their recommendation, have submitted a concise statement of the condition and character thereof."

FUTURE ESTIMATES.

"Section 6. Hereafter, there shall be submitted in the annual book of estimates, following every estimate for a general or lump appropriation, which exceeds \$250,000 in amount, a statement showing in parallel columns:

"First, the number of persons, if any, intended to be employed and the rates of compensation to each, and the amounts contemplated to be expended for each of any other objects or classes of expenditures specified or contemplated in the estimate; and

"Second, the number of persons, if any,

employed, and the rates of compensation paid each, and the amounts expended for each other object or class of expenditures out of the appropriation corresponding to the estimate so submitted, during the completed fiscal year next preceding the period for which the estimate is submitted.

"Section 7. No specific or indefinite appropriation made hereafter in any regular annual appropriation Act shall be construed to be permanent or available continuously, without reference to a fiscal year unless it belongs to one of the following five classes: Rivers and harbors; lighthouses; fortifications; public buildings; and pay of the Navy and Marine Corps, last specifically named in and excepted from the operation of the provisions of the so-called "Covering-in Act," approved June 20, 1874, or unless it is made in terms expressly providing that it shall continue available beyond the fiscal year for which the appropriation Act in which it is contained makes provision."

CANAL APPROPRIATIONS.

A statement showing the appropriations by Congress for the Isthmian Canal, and for fortifications, and the armament thereof, up to and including the present fiscal year, is given below:

ACT OF CONGRESS APPROVED.	Appropriation.	Deficiency.
June 28, 1902.....	*\$40,000,000.00	.....
April 28, 1904.....	†10,000,000.00	.....
June 28, 1902.....	10,000,000.00	.....
December 21, 1905...	11,000,000.00	.....
February 27, 1906.....	.....	5,990,786
June 30, 1906.....	25,456,415.08	.....
March 4, 1907.....	27,161,367.50	.....
February 15, 1908.....	.....	12,178,900
May 27, 1908.....	29,187,000.00	.....
March 4, 1909.....	33,638,000.00	5,458,000
February 25, 1910.....	.....	76,000
June 25, 1910.....	37,855,000.00	.....
June 17, 1910.....	11,200.00	.....
January 13, 1911.....	11,500.00	.....
February 13, 1911.....	11,704.18	.....
March 2, 1911.....	11,056.00	.....
March 4, 1911.....	45,560,000.00	.....
August 24, 1912.....	28,980,000.00	.....
Total.....	\$298,843,242.76	\$23,703,686
Deficiency.....	23,703,686.00	.....
Grand total.....	\$322,546,928.76	.....

*For purchase of Canal rights from the French.

†For purchase of Canal Zone rights.

‡Special acts, relief of private persons.

FORTIFICATIONS.

March 4, 1911.....	\$3,000,000
August 24, 1912.....	2,806,950
Total.....	\$5,806,950

The expenditures to July 31, 1912, amount to the following:

Canal work.....	\$262,692,619.19
Fortifications.....	1,317,008.58
Total.....	\$264,009,627.77

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

The annual reception by the members and guests of the Cristobal Woman's Club to the outgoing and incoming presidents was held on Saturday, September 29, at the Cristobal clubhouse. A short musical program was given, preceded by an address by the new president, Mrs. J. L. Storla.

As this is presumably the last year of federated club work on the Isthmus, an appeal was made to the old members to rally once more, and an invitation was extended to others to become members. The first general meeting of the club was held on Wednesday, October 2, conducted by the philanthropic department. Rev. C. H. El-

liott spoke on the subject of "Art and brotherhood."

The schedule for the year has been completed, and calls for a varied and interesting series of programs. There will be one general meeting each month, and the art and literature and home departments will each hold one meeting a month, with program. The programs of the art and literature department are, as follows: October 16, McDowell afternoon; November 20, Wedgewood and Royal Doulton; December 18, review of new books; in January, a musical evening; February 19, well-known women writers; March 19, modern pictures of children; April 16, Stevenson's verse and song. This department will contribute a program to the general meeting on the subject of Spanish articles. The program of the home department will be: October, recreation in the home; November, system in the home;

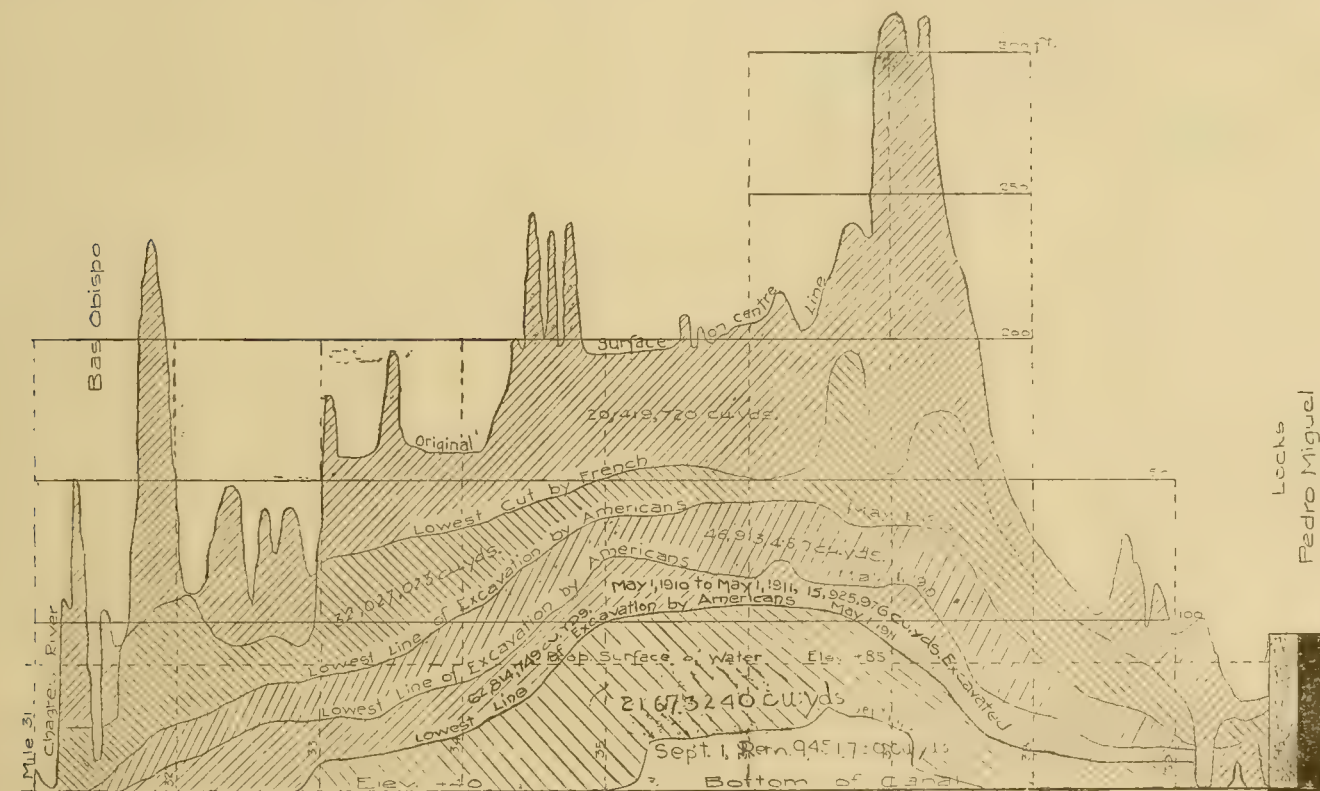
CULEBRA CUT.

Status of Work and Plans for Future Operations.

On October 1, the excavation required for the completion of Culebra Cut amounted to approximately 8,300,000 cubic yards. Up to date approximately 85,400,000 cubic yards of material have been removed from the Cut. Practically all of the excavation remaining to be done lies within a distance of about five miles, between the new bridge at Paraiso and La Pita slide, north of Empire. Beyond the ends of this section the work to be done is the removal of inclines, and of material at the foot of several small slides. One of these slides is at Whitehouse yards, on the west bank, and another is almost opposite, at Station 1631, where the Obispo Diversion dike settled in June, 1912. The accompanying profile (A) shows the distribution of excavation to be done between

is due to them. Sketch B shows a cross section of the Cut at Station 1778, opposite Culebra, with heavy slides on either side. It will be noted that the banks have broken back until the width across the top of the Cut at this station is 1,690 feet. Had the material allowed a continuous 1-on-1 slope of the banks, the width at top of a 300-foot channel, carried 270 feet below the original surface, would have been 840 feet, with proportionate decrease in excavation. The action of the slides is indicated further by the crossing of the lines showing sections in October, 1911, and September, 1912.

Because the development and extent of slides cannot be accurately estimated, excavation through the Cut will be prosecuted with vigor to obviate contingencies. The number of steamshovels at work, which has averaged about 37 since the beginning of the



SKETCH A.—PROFILE OF CULEBRA CUT.
(Showing material excavated and to be excavated.)

December, modern kitchens; January, domestic animals; February, home life in the Colonies; and April, gardening. Several speakers have promised their services for the general meetings, and the club looks forward to an unusually interesting year.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Gorgona, C. Z., on Sunday, October 6, at 6 p. m. The program follows:

1. March—*Spirit of Independence*.....Holzman
2. Selection—*The Red Widow*.....Gebert
3. Popular Song—*Climb a Tree With Me*.....Harris
4. Overture—*If I Were King*.....Adam
5. Intermezzo—*Indian Summer*.....Moret
6. Medley selection—*Broadway Review*.....Lampe
7. ————*Humoresque*.....Dvorak
8. Waltz—*Tres Jolie*.....Waldteufel
9. —*Gaby Glide*.....Hirsch

CHARLES E. JENNINGS, Musical Director.

The next concert will be given at Bas Obispo, October 13, at 6 p. m.

The euchre party to be given by the altar society of St. Ferdinand's Church, Empire, has been postponed until October 12. Game will begin at 8.30 p. m.

the dike at Gamboa and Pedro Miguel Lock. The following table of elevations of pioneer cuts indicates the status through the unfinished part:

Station.	Near Village.	Elevation.
1630	Las Cascadas	39
1680	Empire	39
1692	Empire	44
1700	Empire	58
1720	Empire	60
1750	Lirio	62
1760	Lirio	68
1780	Culebra	64
1794	Culebra	48
1820	Cucaracha	40
1880	Paraiso	39
1930	Pedro Miguel	39

The elevations of pioneer cuts are not a complete index, nor one that can be interpreted uniformly, because of breaks and slides along the channel embankments. Over twice the amount of material yet to be taken from the channel to complete the Cut has already been taken out from slides, and about 45 per cent of the excavation remaining to be done

present rainy season, is shortly to be increased to 41 or 42. It is planned to have the dry excavation finished by July 1, 1913. Shortly after that, water will be let into the Cut through the dike at Gamboa, and the ladder dredge *Corozal* is to be brought into the Cut from the Pacific entrance, to work at the foot of any slides which continue to develop, in addition to removing the dike and cleaning out about 150,000 cubic yards of silting in the completed channel between Gamboa and Mamei.

The slides call for no other treatment than unremitting excavation. The plan for excavating at the top, however, has reduced the size of the slides and restricted their menace. Following heavy rains on September 21, 1912, the slides at Culebra, shown in Sketch B, pushed out at the toes. One of them partly buried two steamshovels, and closed the pioneer cut for a distance of 50

feet. Experience leads the engineers in charge to believe that if the tops of these slides had not been previously lightened by excavation, the movement would have been sufficient to bury all tracks and close the Cut from bank to bank. Excavating at the top will be continued on all large slides.

work, the construction districts of the Central Division have been rearranged as of October 1. The Empire district is extended to Station 1760, opposite Culebra, and includes approximately all of the Cut on the north side of the present continental divide. The Culebra district extends in the opposite direction

construction districts of the Central Division will be made effective October 1, 1912.

The Empire construction district will extend from the Chagres River to Station 1760.

The Culebra construction district will extend from Station 1760 to the Pedro Miguel lock, and will include the incline tracks at Paraiso and the I. C. C. main line tracks adjacent thereto, as far south as a point opposite the north face of the northeast wing wall at the Pedro Miguel lock.

The Pedro Miguel construction district will comprise the Central Division tracks south from a point opposite the north face of the northeast wing wall of Pedro Miguel Lock, and the Miraflores and Balboa dumps.

The resident engineer will have station marks erected to show the limits of each construction district.

D. D. GAILLARD, Division Engineer.

Ancon Hospital Laundry Prices.

ANCON, C. Z., September 26, 1912.

Effective November 1, 1912, the following laundry prices will govern at the Ancon Hospital laundry:

Men's Articles.	Price.	Women's Articles.	Price.
Coats, khaki.....	10	Aprons.....	5
Coats, linen.....	10	Belts.....	1
Coats, white.....	12	Caps.....	2
Collars.....	1½	Chemises.....	8
Cuffs, pair.....	3	Chemises, fancy.....	12
Drawers.....	5	Collars.....	1½
Handkerchiefs, cotton.....	1½	Collars, cape.....	5
Handkerchiefs, silk.....	5	Corsets.....	10
Hats.....	15	Covers, corset.....	8
Jackets, overall.....	8	Covers, corset, fancy.....	12
Leggings.....	10	Cuffs, pair.....	3
Nightshirts.....	5	Drawers.....	8
Trousers, khaki.....	10	Drawers, fancy.....	12
Trousers, linen.....	10	Dresses.....	30
Trousers, overall.....	8	Dresses, fancy.....	35
Trousers, white.....	12	Dresses, ward.....	5
Robes, bath.....	8	Gowns.....	8
Shirts, dress.....	10	Handkerchiefs.....	1½
Shirts, silk.....	10	Kimonos.....	10
Shirts, soft.....	8	Nightdresses.....	10
Socks, pair.....	3	Nightdresses, fancy.....	12
Suits, pajama.....	10	Robes, bath.....	8
Suits, union.....	8	Sacks, dressing.....	10
Ties.....	1½	Shirtwaists.....	10
Undershirts.....	5	Shirtwaists, fancy.....	12
Vests.....	10	Skirts.....	15
FAMILY WASHING.			
Bags, laundry.....	2	Skirts, fancy.....	18
Bars, mosquito.....	10	Stockings, pair.....	3
Bedspreeds.....	10	Suits, union.....	8
Blankets.....	10	Underskirts.....	12
Curtains, large.....	5	Underskirts, fancy.....	18
Curtains, small.....	5	Undervests.....	5
Doilies.....	1	Waists.....	10
Felts, table.....	5	Wrappers.....	10
Napkins.....	1	Wrappers, fancy.....	12
Pillowcases.....	2	CHILDREN'S ARTICLES.	
Scarfs.....	3	Bibs.....	3
Sheets.....	3	Drawers.....	3
Tablecloths.....	3	Dresses.....	10
Towels.....	1	Jumpers.....	5
		Pants.....	5
		Skirts.....	7
		Socks, pair.....	2
		Underskirts.....	3
		Waists, outer.....	5
		Waists, under.....	3

CHAS. F. MASON, Superintendent.

OFFICIAL CIRCULARS.

Commissary Books for Cash.

CIRCULAR No. 256-G.

CULEBRA, C. Z., September 16, 1912.

Effective October 1, 1912, commissary coupon books will be sold for cash at the following commissaries on the dates and during the hours specified below:

PLACE.	Sold by.	Days.	Hours.
Porto Bello.....	Storekeeper	Every day	Business hours
Toro Point.....	Storekeeper	Every day	Business hours
Colon.....	Cashier, P. R. R.	Every day	Business hours
Cristobal.....	Cashier, commissary	Every day	Business hours
Gatun.....	Clerk at commissary	Mondays and Fridays	11 a. m. to 7 p. m.
Monte Lirio.....	P. R. R. station agent	Every day	Business hours
Gorgona.....	Issuing clerk, Mechanical Div.	Every day	Business hours
Bas Obispo.....	Storekeeper	Every day	Business hours
Las Cascadas.....	Assistant storekeeper	Every day	Business hours
Empire.....	Clerk at commissary	Mondays and Fridays	8 a. m. to 7 p. m.
Culebra.....	Clerk at commissary	Tuesday and Thursdays	8 a. m. to 7 p. m.
Rio Grande.....	(See Culebra)		
Paraiso.....	(See Pedro Miguel)		
Pedro Miguel.....	Clerk at commissary	Wednesdays and Saturdays	8 a. m. to 5.30 p. m.
Miraflores.....	(See Pedro Miguel)		
Corozal.....	Clerk at commissary		
Panama-Ancon.....	Assistant cashier, P. R. R.	Tuesdays and Thursdays	8 a. m. to 6 p. m.
Balboa.....	Assistant storekeeper	Every day	Business hours

GEO. W. GOETHALS, Chairman.

Promotions to Positions Vacated after October 1, 1912.

CULEBRA, C. Z., September 25, 1912.

Lieut.-Col. D. D. GAILLARD,
Division Engineer, Empire.

Sir: Request for decision was received from your office this afternoon on the question of promotions to positions which will be vacated by men after October 1, whose leave of absence is commuted to a cash payment, the question being whether promotions to such positions could be made immediately, or whether the promotions should be made after the number of

days had expired, which would have been granted as leave.

Promotions should not be made until the period which would have been granted as leave has expired. This is necessary to prevent allotments of appropriations being expended.

Respectfully,
GEO. W. GOETHALS, Chairman.

Central Division Construction Districts

EMPIRE, C. Z., September 27, 1912.

CENTRAL DIVISION CIRCULAR No. 333:

By authority of the Chairman and Chief Engineer, the following changes in the division lines between the

Misdirected Letters.

ANCON, C. Z., October 2, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts and may be procured upon request of the addressees:

Almour, G. W.	Jones, Nellie
Banks, Ben	Kennedy, Edw.
Bowen, H. A.	Knapp, Josephine B.
Boyd, Charles	Laws, Ewell H.
Brennan, Earl C.	Martindale, Dudley
Briggs, R. M.	Monohan, I. P.
Burns, Robert	Ogill, Dorothy H.
Carson, Mrs.	Podolsky, S.
Chambers, Henry F.	Post, B. H.
Clark, W. C.	Renwick, Arthur B.
Conry, Chas. F.	Repak, Peter
Cumings, C. C.	Rogers, Captain T. J.
Deavours, Jno. C.	Simonson, S. E.
De Force, Clifton	Smyth, Dr. James
Fairbanks, C. M.	Stevens, Sherlock B.
Fiss, C. A.	Stowell, W. Allan (2)
Gallagher, Joseph R.	Tailford, R. J.
Grant, George	Walter, A. S.
Howard, J. W.	White, C. A.
Hurtado, E. L.	Whitehead, R. H. (3)
Jackson, Dr. A. S.	Willes, S.
Jimenez, Roberto A.	Woodford, Earl
Jones, Sidney Earle	

The new railroad bridge over Culebra Cut, north of Pedro Miguel Lock, known as No. 57½, was used by passenger trains for the first time on Thursday, September 26, when train No. 5 passed over it. The work of dismantling the old bridge has been begun.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The moving picture schedule for next week is, as follows: Monday, October 7, Gorgona; Tuesday, October 8, Gatun; Wednesday, October 9, Cristobal; Thursday, October 10, Culebra; Friday, October 11, Corozal; Saturday, October 12, Empire.

During the illness of Mr. Warr, Mr. Russell will be in charge at the Empire clubhouse.

COROZAL.

A "smoker" was held at the clubhouse on Saturday evening, September 28. Two hundred men were present. The program consisted of the following numbers: Selection, Tenth Infantry; xylophone solo by Private White of the 10th Infantry; song and dance by Mr. Stapleton of Corozal; calisthenic drill by Tenth Infantrymen; Scotch songs in dialect by J. Cullen, Corozal; illuminated club swinging by Mr. Kramer of Gorgona; black face comedy act by Messrs. Cogan, Otis, and Robitoy of Gorgona; Japanese sword contest by Messrs. Callahan and Paul of Corozal; wrestling bout by Messrs. Hughes and Cousineau.

Some of the Corozal wrestlers have been trying out on the new wrestling mat, purchased last week.

The new punching bag platform will soon be ready for use.

There will be a moving picture entertainment at the clubhouse on Saturday evening, October 5.

The standing of those entered in the local handicap pool tournament is, as follows:

Handicap.	Name.	Won.	Lost.	P. C.
60	Souder.....	3	0	1.000
60	Patrick.....	5	0	1.000
60	White.....	4	2	.665
60	Stagg.....	3	2	.600
60	Kent.....	3	3	.500
70	Stapler.....	1	1	.500
50	Underwood.....	2	2	.500
80	Tougher.....	1	1	.500
80	Besile.....	2	4	.333
80	Roberts.....	2	5	.286
80	Hostetter.....	1	5	.167

Highest run—Fourteen balls made by Roberts.

CULEBRA.

After an intermission of several weeks, moving picture exhibitions were resumed at Culebra on Saturday evening, September 28, in the enlarged hall in the second story of the Culebra schoolhouse. The room has a seating capacity of about 250, and is cool and centrally located. The next in the series of exhibitions will be held on Friday evening, October 4.

All the newspapers and periodicals formerly on file at the Culebra clubhouse may, for the time being, be consulted in the room adjoining the office of the superintendent of clubhouses, second floor, Administration annex.

The work of rebuilding the bowling alleys and enclosing the space to be used as a pool room is progressing rapidly.

GORGONA.

Special music was provided for the sunset song service on September 29. Those taking part were: Mrs. A. P. Boyd, soprano; Mrs. G. R. D. Kramer, contralto; Mr. G. R. D. Kramer, tenor; Mr. E. P. Case, bass.

The bowling alleys were reopened on Monday evening, September 30. The local tournament temporarily suspended, in order to repair the alleys, will be resumed next week.

Regular and special gymnasium work was started under the direction of Mr. Watson on Monday, September 30. A special afternoon class for night men will be organized soon.

Basketball practice will be held on Mondays and Thursdays.

GATUN.

The commissary mandolin and guitar club gave an informal concert at the clubhouse on Saturday evening, September 28. One of the attractions was the chess match between the local clubhouse and Culebra. The Gatun players were defeated by a score of 14 to 0.

A gymnasium class, to be known as the married men's class, was started on Monday evening, September 30. The object of this class will be to give all those who find it inconvenient to attend the senior gymnasium class an opportunity for physical exercising. The class will be held twice a week from 5.30 to 6.30 p. m.

Mr. Woolworth is conducting an athletic contest among the members of the senior gymnasium class. This contest is held once a week and will continue for a period of about two weeks. A certain number of points are given for each of the several events; the member who receives the largest total number of points will receive a medal. Considerable interest is being shown in the events. The present standing is, as follows: Rogers, 464; Martinoff, 365; Newcombe, 268; Miller, 244;

Staub, 234; J. Loulan, 219; Flynn, 216; Jendros, 195; Jannus, 166; Baeder, 145; Daniels, 121; Ogilvie, 106. All others are below 100.

The Isthmian basketball tournament will be opened at Gatun on Saturday evening, October 5, when Gorgona will visit the local clubhouse. The public is cordially invited to see the game. Mr. Joseph P. Mitchell was elected captain of the Gatun basketball team. Physical Director Woolworth, Captain Mitchell, and Mr. Ourand have been appointed a committee to decide all questions concerning the Gatun team. The following men form a group from which a first team will be selected: Mitchell, Neeley, Judd, Huber, Wright, Whiston, Fitzpatrick, Hess, Conley, Brinkerhoff, Jendros.

The athletic contest being held among the members of the boys' department resulted, as follows: L. Appleton, 809; Meise, 600; Sisson, 518; Quinn, 463; Neville, 439; Cummings, 414. All others are below 400.

The Spanish classes now number 20 students, and there are five enrolled in the shorthand class. The former meet on Wednesday and Friday evenings, and the latter on Tuesday evening. A beginners' class in Spanish for ladies will be started as soon as five names are received.

CRISTOBAL.

There will be a "smoker" at the clubhouse on Thursday night, October 10.

Saturday evening, September 28, the Gorgona bowling team lost three games to the Cristobal team.

An error occurred in the notice last week concerning

the married folks tournament. The night for the next tournament is October 21, instead of October 2.

A volleyball and handball league will be started soon. Players interested are requested to hand their names in at the desk, or to Mr. Schulte.

Part of the porch of the Corozal commissary has been enclosed, and will be used as a boot and shoe department.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending October 9, 1912 (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
October 3.....	1.42	7.44	2.18	8.20	
October 4.....	2.40	8.42	3.22	9.27	
October 5.....	3.55	9.56	4.35	10.48	
October 6.....	5.16	11.22	5.52		
		P.M.			
October 7.....	12.10	6.32	12.42	7.00	
October 8.....	1.16	7.35	1.46	7.58	
October 9.....	2.12	8.28	2.39	8.48	

Lost—Sapphire and pearl pin in form of a spray of leaves. "1719 N. Ill." is scratched on back. Lost between Colon station, Quartermaster's, and V. M. C. A., Cristobal. Reward. B. H. Mallory, Gatun.

TELEPHONE DIRECTORY CHANGES.

The following additional changes have been made in the list of subscribers published in the Panama Railroad Company's telephone directory as of May 15, 1912. Telephone subscribers are requested to make a note of these changes in their copy of the directory:

ADDITIONS.				Office or Residence.
EXCHANGE.	Number.	Name.	Location.	Department.
Gatun.....	94	C. E. Langley	Gatun	Atlantic Division
Empire.....	136-B	The Auto Co., A. W. McCully, Manager	Empire	Office
Empire.....	26-R	John Boland	Culebra	Tel. and Tel.
Empire.....	25-R	O. E. Malsbury	Culebra	Sec. Div. C. E.
Empire.....	756-A	Hagan's shanty	Cunette	Central Division
Colon.....	189-B	Foreman Madison	Colon	P. R. R.
Colon.....	33-R1	D. Street sewer	Colon	Atlantic Division
Toro Point.....	16	C. C. Snedeker	Toro Point	Atlantic Division
Toro Point.....	5	C. C. Snedeker	Toro Point	Atlantic Division
Toro Point.....	20	W. L. Daniels	Toro Point	Atlantic Division
Toro Point.....	20	Night watchman	Toro Point	Atlantic Division
Toro Point.....	21	D. E. Hall	Toro Point	Atlantic Division
Gatun.....	97	F. M. Bottenfield	Gatun	Residence
Gatun.....	116-2	Pipe shop	Gatun Locks	Atlantic Division
Gatun.....	47-B	M. J. Steele	Gatun	P. R. R.
Gatun.....	727-3	Jas. Christian	Monte Lirio	P. R. R.
Panama.....	109	W. W. Nims	Ancon	Residence
Panama.....	62	W. H. Dibble	East Balboa	Central Division
Empire.....	101-R2	Pullig's car	Gamboa	P. R. R.
Gatun.....	727-2	Westbrook, S. Y.	Dump 6	P. R. R.
Empire.....	755-2	R. Ferguson	Bas Obispo	Central Division
Empire.....	706-3	Police station	Gamboa	Civil Administration
Empire.....	132-B-2	La Pita slide	Cunette	Central Division
Empire.....	191-R	J. E. Johnson	Empire	Chief Engineer
Corozal.....	14-B	McClintic-Marshall Construction Company	Miraflores	Office
Colon.....	728-A	Storehouse	Margarita Island	Fortifications
Empire.....	169-B	W. T. Snyder	Empire	Transportation
Empire.....	756-2L-15	New Tower J	Empire	Transportation
Empire.....	743-2L-15	New Tower J	Empire	Transportation
Empire.....	84-B-1	McClintic-Marshall Construction Co	Pedro Miguel	Office
Empire.....	161-R	Steamshovel No. 129	Empire	Central Division
REMOVALS.				
Empire.....	194	L. K. Needham	Empire	P. R. R.
Empire.....	136-B	W. C. McIntyre	Empire	Central Division
Colon.....	54	Construction foreman	11th St., Colon	P. R. R.
Colon.....	55	Tug Phoenix	Colon	P. R. R.
Toro Point.....	10	Yardmaster	Toro Point	Atlantic Division
Toro Point.....	16-R-2	McAdams	Toro Point	Atlantic Division
Toro Point.....	5	McAdams	Toro Point	Atlantic Division
Toro Point.....	20	Quarry	Toro Point	Atlantic Division
Gatun.....	114-3	Tower H	Gatun	Atlantic Division
Empire.....	101-R-2	Albert's car	Gamboa	P. R. R.
Gatun.....	37-A-2	Fort. handling dock	Mindi	Fortifications
Gatun.....	727-5	Colcote's car	Frijoles	P. R. R.
Gatun.....	110-2	Marine dispensary	Gatun	Sanitary
Empire.....	750-2	Campbell's car	Gamboa	P. R. R.
Empire.....	755-2	J. W. Sneed	Bas Obispo	Central Division
Empire.....	114	Wrecker	Las Cascadas	Office
Gatun.....	444-2	Borrow pit	New Gatun	Atlantic Division
Colon.....	728-4	East Diversion switch	Margarita spur	Fortifications
Empire.....	756-1-1-1	Tower K	Empire	Transportation
Empire.....	743-1-1-1	Tower K	Empire	Transportation

CHANGE IN NUMBERS.

EXCHANGE.	Name.	Location.	Old Number.	New Number.	Remarks.
Empire.....	C. Mealer	Culebra	26	26-B	Residence
Colon.....	A. Showers	Colon	33-R	33-R-2	Residence
Gatun.....	Gatun school	Gatun	47	47-A	Office
Gatun.....	Lock No. 3	Gatun	116	116-R-1	Office
Panama.....	M. E. Gilmore	Ancon	19-B	168	Residence
Empire.....	Engine house	Gamboa	101-B-1	197-B 1	Office
Empire.....	Pullig's car	Gamboa	101-R-2	197-R-2	Residence
Gatun.....	Emergency Dam Insp.	Gatun	730	127	Office
Gatun.....	Dredge No. 82	Gatun Lake	98-2	227-2L-2S	Office

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning October 1, 1912:

FRESH MEATS.	Price.
Mutton—Stewing per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire forequarter (not trimmed, 10 pounds and over), per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Leg (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	16
Chops, per pound.....	24
Loin for roasting, per pound.....	24
Cutlets, per pound.....	28
Pork—Loin chops or roast, per pound.....	18
Beef—Suet, per pound.....	2
Soup, per pound.....	5
Stew, per pound.....	8
Plate, per pound.....	9
Corned, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Chuck roast (3 pounds and over), per pound.....	12
Pot roast, per pound.....	15
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds), per pound.....	18
Sirloin roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, chuck, per pound.....	12½
Round, per pound.....	13
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds), per pound.....	20
Tenderloin (Western), per pound.....	25
Venison (Imported), Stew, per pound.....	6
Forequarter (not under 6½ pounds), per pound.....	9
Rack (not under 5½ pounds), per pound.....	20
Saddle (not under 7½ lbs.), per pound.....	20
Leg (not under 9 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24

MISCELLANEOUS.

Pate de Foie Gras, jar.....	55
Livers—Beef, per pound.....	11
Calf, each.....	60
Half, each.....	30
Steak Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	11
Frankfurter, per pound.....	12
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	19
Sweetbreads—Beef, per pound.....	25
Eggs, fresh, dozen.....	36
one-half dozen only.....	18
Bluefish, per pound.....	12
Halibut, fresh, per pound.....	12
Salmon, fresh, per pound.....	22
Fluke, fresh, per pound.....	10
Shads, fresh, each.....	50
Roes, shad, pair.....	25

POULTRY AND GAME.

Chickens—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds each.....	1.25
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00
Fowls, each.....	1.60, 70, 80, 90, 1.00
Ducks, (Western, about 4½ pounds,) each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	35
Capons, each.....	2.10
Ducks, blackhead, pair.....	60
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants, per pair.....	1.30

CURED AND PICKLED MEATS.

Ham—German, Westphalia, per pound.....	36
Sugar cured, per pound.....	20
Sliced, per pound.....	21
Half, for boiling, per pound.....	22
Boiled, per pound.....	28
Hocks, per pound.....	28
Beef, salt, family, per pound.....	12

Price.

Bacon—Breakfast, whole piece, per pound.....	23
sliced, per pound.....	24
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00
Pigs' feet, per pound.....	9
Tongues, per pound.....	18

DAIRY PRODUCTS.

Butter—Creamery, special, per pound.....	39
Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	45
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Parmesan, per pound.....	35
Edam, tin.....	26
Gouda, per pound.....	10
Milk (Certified), per bottle.....	*20
Butter, bottle.....	*15
Fer-mil-lac, bottle.....	*20
Ice cream, quart.....	725
½ gallon.....	750

VEGETABLES AND FRUITS.

Beets, per pound.....	4
Celery, per head.....	8
Cabbage, per pound.....	4
Cucumbers, per pound.....	5
Carrots, per pound.....	4
Lettuce, per pound.....	15
Onions, per pound.....	3½
Potatoes, white, per pound.....	3½
sweet, per pound.....	3
Potatoes, Jersey sweet, per pound.....	4
Peppers, green, per pound.....	3
Romaine, per pound.....	10
Squash, per pound.....	*3
Turnips, per pound.....	3
Tomatoes, per pound.....	6
Yams, per pound.....	3
Apples, per pound.....	5
Cantaloupes, each.....	10
Grapes, per pound.....	*8
Grape Fruit, each.....	4
Lemons, dozen.....	36
Limes, per 100.....	80
Plums, per pound.....	11
Pears, per pound.....	8
Oranges, Jamaica, per dozen.....	12
Pineapples, each.....	12½
Watermelons, each.....	35
Peaches, per pound.....	*8

*Indicates reduction from last list.

†Indicates 5 cents allowed for return of bottle.

‡Indicates advance on last list.

††Fowls weigh each about, as follows; 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock next lightest weight is supplied and refund note sent for difference.

?Sold only from commissaries; no orders taken for delivery.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending September 28:

Haakon VII, September 22, from Fernandina, with 8,847 pieces yellow pine lumber, for Mechanical Division; and 1,924 pieces piling, for stock.

Trent, September 22, from New York, with 119 packages track material, for superintendent of erection; 8 cases hardware, for stock; 202 bundles steel bars, 250 pieces steel bars, for Pacific Division.

Twines, September 22, from New York, with 24 cases castings, 97 packages machinery, 13 reels cable, for superintendent of erection.

Prinz Sigismund, September 24, from New York, with 4 cases hardware, for stock.

Zacapa, September 25, from New York, with 7 reels cable, 19 cases machinery, for superintendent of erection; 184 bundles steel bars, for Pacific Division; 2,151 bars copper ingot, for Mechanical Division; 50 coils Manila rope, 30 barrels rosin, 12 pigs metal, for stock.

Portland, September 26, from San Francisco, with 3,000 cases Trojan powder, for stock.

Parismina, September 26, from New Orleans, with 10,872 pieces yellow pine lumber, for Mechanical Division; 266 pieces piling, 1,362 pieces yellow pine lumber, 105 pieces white oak lumber, 12 pieces steam-shovel chains, for stock.

Barbadian, September 27, from Liverpool, with 3 reels cable, for Pacific Division.

Allianca, September 26, from New York, with 16 crates marble, 196 packages enamelware sinks, for Panama Railroad Company; 11 cases machinery, for Pacific Division; 18 cases signal material, for Panama Railroad Company; 9 cases rubber boots, for fortifications; 27 rolls wire fencing, 18 cases paper, 35 cases napkins, 10 cases muriatic acid, 10 cases varnish, 31 reels wire rope, 600 kegs bolts, 20 bales rubber hose, 186 pigs lead, 43 packages plumbing supplies, for stock; 26 packages castings, for superintendent of erection; and a miscellaneous cargo, the whole consisting of 2,300 packages, weighing 250 tons.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Colon.....	P. R. R. Friday.....	Sept. 27
Advance.....	P. R. R. Thursday.....	Oct. 3
Panama.....	P. R. R. Wednesday.....	Oct. 9
Allianca.....	P. R. R. Tuesday.....	Oct. 15
Colon.....	P. R. R. Monday.....	Oct. 21
Advance.....	P. R. R. Saturday.....	Oct. 26
Panama.....	P. R. R. Saturday.....	Nov. 2
Allianca.....	P. R. R. Friday.....	Nov. 8
Colon.....	P. R. R. Thursday.....	Nov. 14

CRISTOBAL TO NEW YORK.

Allianca.....	P. R. R. Thursday.....	Oct. 3
Colon.....	P. R. R. Wednesday.....	Oct. 9
Advance.....	P. R. R. Tuesday.....	Oct. 15
Panama.....	P. R. R. Monday.....	Oct. 21
Allianca.....	P. R. R. Sunday.....	Oct. 27
Colon.....	P. R. R. Saturday.....	Nov. 2
Advance.....	P. R. R. Thursday.....	Nov. 7
Panama.....	P. R. R. Thursday.....	Nov. 14

NEW YORK TO COLON.

Magdalena.....	R. M. Saturday.....	Sept. 28
Prinz Eitel Friedrich.....	H. A. Saturday.....	Sept. 28
Carrillo.....	U. F. C. Saturday.....	Sept. 28
Santa Marta.....	U. F. C. Wednesday.....	Oct. 2
Prinz August Wilhelm.....	H. A. Saturday.....	Oct. 5
Turrialba.....	U. F. C. Saturday.....	Oct. 5
Metapan.....	U. F. C. Wednesday.....	Oct. 9
Tivives.....	U. F. C. Saturday.....	Oct. 12
Clyde.....	H. A. Saturday.....	Oct. 12
Prinz Sigismund.....	H. A. Saturday.....	Oct. 12
Zacapa.....	U. F. C. Wednesday.....	Oct. 16
Prinz Joachim.....	H. A. Saturday.....	Oct. 19
Sixaola.....	U. F. C. Saturday.....	Oct. 19
Almirante.....	U. F. C. Wednesday.....	Oct. 23

COLON TO NEW YORK.

Zacapa.....	U. F. C. Thursday.....	Oct. 3
Prinz Joachim.....	H. A. Monday.....	Oct. 7
Sixaola.....	U. F. C. Tuesday.....	Oct. 8
Almirante.....	U. F. C. Thursday.....	Oct. 10
Prinz Eitel Friedrich.....	H. A. Monday.....	Oct. 14
Carrillo.....	U. F. C. Tuesday.....	Oct. 15
Oruba.....	R. M. Tuesday.....	Oct. 15
Santa Marta.....	U. F. C. Thursday.....	Oct. 17
Prinz August Wilhelm.....	H. A. Monday.....	Oct. 21
Turrialba.....	U. F. C. Tuesday.....	Oct. 22
Metapan.....	U. F. C. Thursday.....	Oct. 24

NEW ORLEANS TO COLON.

Cartago.....	U. F. C. Saturday.....	Sept. 28
Heredia.....	U. F. C. Wednesday.....	Oct. 2
Atenas.....	U. F. C. Saturday.....	Oct. 5
Heredia.....	U. F. C. Wednesday.....	Oct. 9
Parismina.....	U. F. C. Saturday.....	Oct. 12
Abangarez.....	U. F. C. Saturday.....	Oct. 19
Cartago.....	U. F. C. Wednesday.....	Oct. 23

COLON TO NEW ORLEANS.

Parismina.....	U. F. C. Thursday.....	Oct. 3
Cartago.....	U. F. C. Thursday.....	Oct. 10
Atenas.....	U. F. C. Thursday.....	Oct. 17
Parismina.....	U. F. C. Thursday.....	Oct. 24
Abangarez.....	U. F. C. Thursday.....	Oct. 31
Cartago.....	U. F. C. Thursday.....	Oct. 31

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston, at 10 a. m., on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* sail at 2 p. m., and call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending September 28: Arrivals—September 23, *Barracouta*, from San Francisco; September 24, *Urubamba*, from Callao; September 25, *Chile*, from Guayaquil; September 25, *Limari*, from Valparaiso; September 26, *Portland*, from San Francisco; September 26, *San Juan*, from San Francisco.

Departures—September 23, *Peru*, to Guayaquil; September 25, *Quito*, to Guayaquil; September 25, *Guatemala*, to Callao; September 26, *Lewis Luckenbach*, to San Francisco; September 28, *Pennsylvania*, to San Francisco; September 28, *Manari*, to Buenaventura.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, OCTOBER 9, 1912.

No. 7.

The Canal Record

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Address all Communications

THE CANAL RECORD.

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Gates to Full Height at Pedro Miguel Lock.

All of the gates at Pedro Miguel Lock have been brought to their full height, and the sheathing is in place on all of them, with the exception of the lower guard gates. The last of the two gate erection bridges has been dismantled and transferred to Miraflores. The west flare and cut-off walls at the upper end of the lock have been brought to a height of 40 feet. The east flare wall foundations have been laid, and the site of the cut-off wall is being excavated to rock at elevation about plus 35 feet. The water from the drainage channel in Culebra Cut passes through the center wall culvert, and out the south end. The heavy rain of Thursday, September 26, raised the water in the drainage channel to such an extent that the lower chambers of the lock became flooded. To prevent a repetition of the occurrence a small dike is being built on the west side of the lower chamber.

Canal Work in September.

The grand total of Canal excavation to October 1 was 180,423,874, leaving to be excavated 31,803,126 cubic yards, or a little more than one-sixth of the entire amount necessary for the completed Canal. The total excavation for the month of September was 2,124,440, as compared with 2,538,764 cubic yards in September, 1911, and 2,687,088 cubic yards in September, 1910.

The dry excavation amounted to 1,137,380 cubic yards, and was entirely by steamshovels. The dredges removed 955,181 cubic yards from the Canal prism, in addition to the amount pumped into Gatun Dam by suction dredge. The progress in the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division the total excavation was 498,147 cubic yards. Of this total, 1,025 cubic yards consisted of dry excavation near Gatun Locks, and the remainder was wet excavation—372,302 cubic yards from

the Atlantic entrance, and 124,820 cubic yards dredged between the Locks and the open water channel to the sea.

The total excavation in the Central Division was 935,056 cubic yards, including 909,856 yards from the Culebra Cut section, and 12,856 cubic yards from the Obispo Diversion. This is the lowest record of excavation in the Culebra Cut section since November, 1907.

In the Pacific Division, the total excavation was 691,237 cubic yards, 201,299 cubic yards of which consisted of dry excavation, 143,008 cubic yards from the Canal prism, 50,738 cubic yards from the terminal site, and the remainder near the locks. Of the 458,059 cubic yards of wet excavation, 455,059 cubic yards were from the channel, 31,879 cubic yards from the site of the new inner harbor, and the remainder at Miraflores Locks.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work"	"Plant"	Total
	Excava- tion.	Excava- tion.	excava- tion.
	Cu. Yds.	Cu. Yds.	Cu. Yds.
<i>Dry excavation—</i>			
Locks, dam and spill- way	1,025		1,025
Mindi			
Total	1,025		1,025
<i>Wet excavation—</i>			
Atlantic entrance	372,302		
Locks, dam and spill- way	124,820		
East Diversion			
Total	497,122		497,122
Total wet and dry excavation	498,147		498,147

CENTRAL DIVISION.

<i>Dry excavation—</i>			
Culebra Cut	909,856	12,344	922,200
Chagres section			
Obispo Diversion	12,856		12,856
Total	922,712	12,344	935,056

PACIFIC DIVISION.

<i>Dry excavation—</i>			
Locks, dams and spill- ways	6,805	748	7,553
Balboa terminals	143,008		143,008
Prism, south of Mira- flores Locks	50,738		50,738
Total	200,551	748	201,299
<i>Wet excavation—</i>			
Pacific entrance	455,059	31,879	486,938
Miraflores, Locks and Dam	3,000		3,000
Total	458,059	31,879	489,938
Total wet and dry excavation	658,610	32,627	691,237

TOTAL CANAL EXCAVATION.

Dry excavation	1,124,258	13,092	1,137,380
Wet excavation	955,181	31,879	987,060
Total	2,079,469	44,971	2,124,440

Mean rainfall along Canal (ten stations) 12.13 inches. By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal such as a prism, diversions, or locks, etc., that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as

prism, diversions, or locks, etc., It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

DAM AND LOCK CONSTRUCTION.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	Cu. Yds.	Cu. Yds.
Concrete laid in locks.	3,162	49,161	52,323
Concrete laid in dams and spillways	1,088		1,088
Fill placed in dams	246,956	31,585	278,551

Spillway Gates Opened.

Two of the gates at Gatun Spillway were opened on October 2, when the surface of the lake was at elevation plus 48. It is proposed to hold the lake approximately at this level for about a week and then allow it to rise and flow over the low part of the Spillway dam, which is at elevation plus 50.

Work of the Dredge "Corozal."

During the week ending 6 a. m., October 6, the ladder dredge *Corozal* excavated 43,000 cubic yards of material, 36,100 cubic yards of which consisted of hard clay and soft rock in equal proportion. The dredge is engaged in cleaning up the west half of the dredged channel, 250 feet wide, to grade, namely, minus 43 feet, and the progress made was 200 lineal feet. The material handled had not been blasted, and the dredge was able to cut one foot deep into this soft rock with ease. The entire output was handled by the tug *Reliance*, with four barges, with an average length of tow of about five miles.

The ability of the *Corozal* to handle this soft rock economically will, it is expected, effect a considerable saving to the Canal Commission, as the bottom 10 feet of the Canal, between Stations 2120 and 2240, 12,000 feet in all, or two and one-fourth miles, is chiefly composed of this material.

Tanks for Storage of Fuel Oil.

Four steel tanks, to be erected on the Isthmus for the storage and distribution of fuel oil, have been contracted for by the Canal Commission. Each will have a capacity of 42,000 barrels of oil, or a combined capacity of 168,000 barrels, and will be 93 feet in diameter by 35 feet high, built of steel plates, in accordance with I. C. C. standard specifications. The tanks are to be provided with steel stairways leading to the manways on the roof, and steel ladders down the inside. Two 6-inch ventilators will be installed in each tank near the center of the roof. Two of the tanks will be erected at Balboa, and two at Cristobal.

Bids for these tanks were opened at Washington on August 27, and were in two classes, one class providing for the manufacture, and, including cost of freight, delivery only, at the ports of Colon, Cristobal, or Ancon; and the other, for the manufacture, delivery, and

(Continued.)

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.									Mixed by hand.	Large stone.	Total.
				2-cubic yard mixers.			1-cubic yard mixer.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
	<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>		
September 30.....	802	21.92	7	520	7.00	2	181	10.50	2	455	44.00	6			1,958
October 1.....	728	32.33	6	810	14.00	2	219	11.50	2	479	48.50	6	7		2,243
October 2.....	854	33.42	7	1,116	14.83	2	192	9.50	2	482	47.00	6	18		2,662
October 3.....	738	25.33	5	712	9.33	2	300	16.00	2	489	47.00	6	17		2,255
October 4.....	954	23.83	7	478	17.33	2	310	15.50	2	400	40.00	6	24		2,166
October 5.....	452	14.50	4	1,132	12.33	2	278	15.00	2	270	41.50	5			2,232
Total.....	4,528	151.33	6	4,768	74.82	2	1,479	78.00	2	2,675	268.00	5.83	66		13,516
Previously reported.....														3,693	1,233,852
Grand total.....														3,693	1,247,368

CANAL ZONE REVENUES.

Operations of the Division of Posts, Customs, and Revenues for Fiscal Year 1911-12.

The revenue derived from the sale of postage stamps and postal cards at the Canal Zone post-offices during the fiscal year ending June 30, 1912, amounted to \$87,550.21. In addition, the sum of \$144.20 was collected for second-class mail matter, making the total income from postal sales \$87,694.41, as compared with \$82,893.72 for the preceding fiscal year, an increase of \$4,800.69.

In November, 1911, there were placed on sale stamp books, containing 12 or 24 two-cent stamps, or 24 one-cent stamps, which are sold at one cent more than the face value of the stamps in the book. The printing and binding is done in the office of the director of posts, and costs about one-third of a cent a book. A total of 29,979 books had been manufactured up to June 30, of which 19,763 were sold, producing a net revenue of \$131.76.

Registered letters and parcels to the number of 145,633 were handled, consisting of 22,477 domestic letters, 6,549 domestic parcels, 43,823 foreign letters, 1,703 foreign parcels 69,144 official letters and parcels registered free, and 1,937 letters and parcels reregistered free. Forty-seven per cent of the registered matter went under the official frank. The total number of registered letters and parcels handled represents an increase of 4,408 over the previous fiscal year. The exchange offices at Cristobal and Ancon handled a total of 89,894 pieces of registered mail. Of these, 5,491 passed through the Ancon office to and from Panama and Central American points, and 84,403 through the Cristobal office to and from points in the United States, Europe, and the West Indies. The railway mail messengers handled 64,099 pouches, sacks, and registered sacks during the year, and at Cristobal, there were 1,235 dispatches of mail.

There were 227,680 money orders issued during the year, representing a value of \$4,915,077.29, and the fees aggregated \$22,889.90. This shows an increase of 12,900 in the number of orders issued, but a decrease of \$389,829.31 in the amount of money involved, while the total of fees collected was \$565.19 less than last year. The average amount of each order issued was \$21.15, as compared with \$24.69 for the previous fiscal year. Orders drawn payable in the United States and foreign countries, except Martinique and Costa Rica, amounted to \$3,823,517.55. Orders drawn payable in the Canal Zone aggregated \$1,080,825.74 in value; in Martinique \$8,604.95, and in Costa Rica \$2,129.05.

There were handled during the year 39,041 pieces of ordinary unclaimed mail matter, of which 10,487 were domestic letters and parcels, and 28,554 foreign letters and parcels. A total of 1,999 misdirected letters were advertised in THE CANAL RECORD, of which about 60 per cent were delivered or forwarded to the addressees.

On June 30, 1912, there were 17 post-offices in the Canal Zone, two less than at the close of the previous fiscal year. The post-offices at Tabernilla, San Pablo, and Bohio were abandoned on account of the rise of Gatun Lake, and a new office was established at Monte Lirio.

POSTAL SAVINGS BANK.

On February 1, 1912, a postal savings system was established at 16 of the Canal Zone post-offices, and up to June 30, accounts

to the number of 3,518 had been opened, 2,402 of which remained opened at the close of the year, with total deposits aggregating \$356,947. The total amount deposited in postal savings accounts during this period was \$600,898, while the withdrawals amounted to \$243,951. On June 30, 1911, the Canal Zone post-offices held unpaid money orders aggregating \$332,141.60 in value, drawn to the order of the remitter, and payable at the office of issue. This sum represented the extent to which the Zone post-offices were used as depositories at the close of the fiscal year 1911. In like manner, the net totals of postal savings deposits—\$356,947, and of unpaid money orders payable in offices of issue—\$193,817.40, in the Zone post-offices on June 30, 1912, aggregating a sum of \$550,764.40, represent the extent to which the post-offices were used as depositories on June 30, 1912, a net increase of \$218,622.80 over the total of the previous fiscal year. This total of over half a million dollars represents the savings of Canal Commission and Panama railroad employees. The 2,402 postal savings depositors having open accounts on June 30, 1912 represented 30 different nations and dependencies.

CUSTOMS SERVICE.

During the year, 327 vessels, with a total tonnage of 619,422, entered the port of Ancon, and the same number, with a total tonnage of 622,023, cleared. At Cristobal, 284 vessels, with a total tonnage of 784,156, entered, and 282 vessels, with a total tonnage of 775,445 cleared. The above figures show the number of entries and clearances to have been 139 greater in the fiscal year 1912, than for the fiscal year 1910.

REVENUES FROM ZONE LANDS.

On June 30, 1912, there were in force 858 leases and revocable licenses, of which 575 were for building lots, 258 for agricultural lands, and 25 for buildings or rooms in buildings, a decrease of 1,383, as compared with June 30, 1911. There has been a decrease in the area of land leased for agricultural purposes by reason of the removal of all habitations from the Gatun Lake region, as well as the withdrawal of lands in other parts of the Zone required for Canal purposes. The area for agricultural land under lease at the close of the year was 352 hectares, approximately 870 acres, as compared with 1,430 hectares, or approximately 3,534 acres, at the close of the preceding fiscal year. Rents collected during the year amounted to \$16,033.54, as compared with \$23,469.22 for

the year ending June 30, 1911, and \$27,282.29 for 1910. The land rentals show a decrease of \$10,550.44, while building rentals increased \$3,114.76.

TAXES AND LICENSE FEES.

The total collections on account of general taxes and licenses aggregated \$122,674.64, as compared with \$123,876 during the previous year. The distillation tax produced a revenue of \$5,083.71, as compared with \$2,353.88 during 1910-11. The liquor license collections amounted to \$55,200, as compared with \$68,400 the previous fiscal year. The sum of \$1,137.83 was collected from insurance companies doing business in the Canal Zone, an increase of \$625.24 over 1910-11. A total of 72 motor vehicle licenses were issued, and \$2,059 were collected in fees, including a fee of \$1 paid by each licensee for a metal tag bearing the license number. Bicycle licenses to the number of 645, and chauffeur licenses to the number of 97, were issued, producing a revenue of \$645, and \$97, respectively. There were collected under the law providing for the inspection of steam vessels fees aggregating \$2,837.15.

ADMINISTRATION OF ESTATES.

The estates of 60 employes of the Canal Commission and the Panama railroad were settled during the year, and 98 were in process of adjustment on June 30, 1912. The money handled amounted to \$7,306.31.

RECAPITULATION.

The total revenues collected by the division during the fiscal year amounted to \$311,994.81, and the total of all moneys handled was \$5,827,970.10, an increase in the amount of moneys handled of \$175,242.82.

Obituary.

William H. Hanley, an employe of the Pacific Division at Corozal, was killed on the sand track, north of Corozal, on September 30. He was married and had been on the Isthmus about five days, coming here from Rochester, New York. He is survived by his wife, living in Rochester.

W. F. Reed, an employe of the Pacific Division at Corozal, died in Ancon Hospital on October 6. He was 29 years of age, single, and had been on the Isthmus nearly two years. He is survived by his brother, Harris Reed, living at Corozal.

Sailing of the "Cristobal"

The sailing of the steamship *Cristobal* has been set for Monday, October 14, at 3 p. m., from dock No. 11, Cristobal.

FINANCES OF FOURTH OF JULY CELEBRATION.

A statement of the amounts contributed to the Fourth of July celebration fund for 1912, follows:

CONTRIBUTED BY	Deducted on pay rolls.	Cash.	Total.	No. of employes	No. of employes contribtg	Average
Quartermaster's Department.....	\$123.50	\$111.00	\$234.50	226	177	1.04
Pacific Division.....	597.50	263.00	860.50	864	517	1.00
Subsistence and Commissary Dept.....	170.50	121.00	291.50	315	231	.93
Central Division.....	236.85	515.65	752.50	819	500	.92
Chief Engineer's Office.....	225.50	145.50	371.00	447	258	.83
Panama Railroad Company.....	289.50	259.00	548.50	680	449	.81
Atlantic Division.....	331.75	290.67	622.42	785	558	.79
Dept. of Civil Administration.....	67.50	166.50	234.00	341	173	.69
Examiner of Accounts.....	27.00	37.00	64.00	97	63	.66
Mechanical Division.....	52.50	545.25	597.75	928	559	.64
Sanitary Department.....	83.50	142.21	225.71	388	187	.58
Disbursing Office.....		15.75	15.75	27	22	.58
	\$2,205.60	\$2,612.53	4,818.13	5,917	3,694	.81
Subscriptions received from others than employes of the Panama railroad or I. C. C.....			\$1,844.25			
Total.....			\$6,662.38			

BALBOA SHOPS PLANT.

Preliminaries of Permanent Works at Pacific Entrance Outlined.

The committee, consisting of Lieut.-Col. T. C. Dickson, Capt. R. E. Wood, Lieut. Frederick Mears, Mr. W. G. Comber, and Mr. H. D. Hinman, appointed to prepare a general scheme showing the relative order in which work on shops, and other buildings; drydock, wharves and piers of the permanent facilities at Balboa, should be prosecuted, to reduce to a minimum interference of this work with the maintenance of the dredging and towing fleets of the Pacific Division, and, in addition, to make recommendations concerning the track layout, and for the removal of certain buildings from the terminal area, has made its report, which has been approved by the Chairman and Chief Engineer. The committee recommends:

1. That double tracks should be laid from the southwest end of the new railroad yard to the Panama railroad steel pier, and as much of these two tracks as will enable them to be completed by December 1, 1912, or as soon thereafter as practicable, should be laid on the permanent location. These tracks should be well ballasted, as they will be used for passenger and labor trains, as well as for freight service. The Panama railroad should abandon the use of the two old freight yards as soon as these double tracks are completed.

2. That a temporary track should be laid to connect the double tracks with the present coal pockets, which should be used as long as possible. When necessary to abandon the coal pockets, arrangements should be made, either to use the coal and rock aprons of the fortification work at Dike Siding, near Station 2145, or temporary pockets should be provided on the old lumber dock.

3. That a single track should be laid from the northeast end of the new lumber dock to the new railroad yards. This track should be laid north of the shop buildings and roundhouse, so it will not interfere with the construction of the new wharf and shop buildings. This track should be laid before January 1, 1913. If the sand dock is to be operated after this track is completed, the spur from near the office of the resident engineer to the new lumber dock should be connected to the above track. This spur should be built, so as not to interfere with the erection of the crane runway extensions and shop buildings.

4. That all large spare parts for dredges, etc., belonging to the Quartermaster's Department should be moved to dump No. 1 before January 1, 1913. The necessary temporary tracks should be provided, so that these parts can be reached with a locomotive crane.

5. That all unserviceable parts, and all other equipment within the terminal area should be moved at once.

6. That the post-office, Panama railroad storehouse, sanitary inspector's office, police station, Quartermaster Department's lumber office, and all other buildings within the area of the terminal facilities, except the office of the resident engineer, the quartermaster's storehouse, shipways, machine shop and blacksmith shop, transformer house, and new terminal office, and the temporary terminal supply house, should be removed by November 1, 1912.

7. All of the machine and erecting shops, and the forge shop, cannot be erected until the sand wharf is removed. The committee

recommends that as soon as the award for structural steel is made, that definite plans be prepared, including the establishment of one or more sand storage piles for the future operation of the Balboa sand plant, in such manner as will enable it to be abandoned early enough to prevent delaying the contractor in completing these buildings.

8. That the present repair wharf should be left intact until sufficient space is available at the new lumber wharf, and the extension thereof to the northeast for making repairs to the floating equipment of the Pacific Division.

9. That it appears that the shipway shops will not have to be abandoned before June, or July, 1913, and that the extension of the coffer dam will not interfere with the use of the shipways before July, or August, 1913, since a considerable portion of the excavation for the large drydock, can be completed before the coffer dam will be required. No means for repairing bottoms of the floating equipment will exist at the Pacific end, when the gridiron and shipways are abandoned, until one of the drydocks shall have been completed. During this interval, equipment requiring repairs to bottom of same can be sent through the Canal to the drydock shops at Cristobal, if the Canal is available, or other arrangements can be made.

10. That the permanent planing mill building should be erected and completed as soon as practicable, and there should be temporarily installed in it the resident engineer's office, the quartermaster's storehouse, and such shop equipment as is necessary for repairs to the floating equipment of the Pacific Division, until the permanent shops are available for that purpose. After this transfer, the office of the resident engineer, the quartermaster's storehouse, and the machine and blacksmith shops and the shipways can be demolished.

11. That the permanent shop buildings be erected in the following order:

1. Planing mill.

2. Foundry, and pattern storage building.

3. Machine and erecting shop, forge shop, boiler shop, gas house, storehouse, and office.

4. Paint shop, and steel storage shed.

5. Boiler house, car repair shop, and galvanizing plant.

6. Roundhouse, and lumber shed.

12. That the section of the repair wharf, northeast of the new lumber dock, and the commercial pier should be completed as promptly as practicable to provide a repair wharf for the floating equipment of the Pacific Division, and increase the dockage facilities for commercial vessels.

13. That, little, if any, work can be done on the section of the repair wharf, southwest of the new lumber dock, until the sand wharf is abandoned.

Administrative District Changes.

The Executive Order abolishing the administrative district of Gorgona went into effect on September 23, and the records of the District Court at that point, as well as the records of the deputy revenue collector, have been transferred to Empire, with which district Gorgona has been consolidated. Act No. 7 of September 1, 1904 established in the Canal Zone the municipal districts of Cristobal, Buenavista, Gorgona, Emperador, and

Ancon, each governed by a mayor and a board of aldermen, who regulated licenses, and administered the affairs of each district through municipal ordinances. The President's Order of March 13, 1907, made effective April 15 of the same year, abolished the district of Buenavista, and the title of "Municipal," as applied to all the districts; and established the administrative districts, as they have existed until recently, part of the Buenavista district having been transferred to Cristobal, and part to Gorgona. District judges were appointed to preside over each district, together with a senior district judge, whose duties, among others, was to preside during the temporary absence of a district judge. This position has been vacant since September, 1911, and was abolished, effective January 1, 1913, by the President's Order of September 12, 1912.

Sale of Scrap Copper Screening, Rope, Rubber, and Hose.

Awards have been made for the sale of all scrap copper screening, manila rope, rubber, and hose, for the period beginning September 5, 1912, and terminating June 30, 1913. Eight bids were received in response to advertisement, which were opened in Washington on August 5. The Nassau Smelting and Refining Works of New York City bid \$12.15 per hundredweight for the scrap copper screening, and received the contract. The Chicago House Wrecking Company, who have the contract for all the old French and American iron scrap remaining on the Isthmus, made the highest bid on the other articles, and procured the privilege. This company's bid for manila rope was \$1.65 per hundredweight; scrap rubber, and hose, \$2.65 each, per hundredweight. The contract for all four classes of material was formerly held by R. Rosenberg and Sons' Company of New York City, and was in force from September 1, 1911, to June 30, 1912. The prices under the old contract were lower on screening, hose, and rubber, but higher on rope, as follows: Copper screening, \$8.25; rubber, \$2.18; rope, \$2.18; rubber hose, \$2.50 per hundredweight. The combined hundredweight price on all four articles is \$3.99 higher, under the new contract, than under the old. Five shipments were made under the Rosenberg contract, consisting of 40,128 pounds of scrap copper screening, 70,869 pounds of old rope, 30,651 pounds of scrap rubber, and 164,989 pounds of old rubber hose, principally air brake hose. The net proceeds from these five sales amounted to \$9,538.40. The material is collected by the various district quartermasters and by them forwarded to Mount Hope storehouse, where it is held until there is enough for a shipment. The last shipment of copper screening was made on May 3 of this year, and, in consequence, there is now on hand 11,924 pounds valued at \$1,448.77.

New Parsonage at Culebra.

A new Baptist parsonage will be built at Culebra for the use of the Rev. S. Moss Lovelidge. It will be a two-story frame building, 23 feet by 39 feet six inches in size, with a veranda in front, of vertical balusters, above and below. On the lower floor, there will be a living room, study, reception room for parishioners, with entrance from the outside, dining room, kitchen, and servant's quarters. Upstairs, there will be four bedrooms, bathroom, dry closet, etc. The parsonage will be situated on the south slope of the hill.

STEAMSHOVEL RECORDS.

Work of Central Division Machines During the Month of September.

During the month of September, the total amount of material excavated in the Central Division was 935,056 cubic yards, of which 164,742 cubic yards were classified as earth, and 770,314 cubic yards as rock. The entire total of 935,056 cubic yards was removed by steamshovels.

The high record for the month was made by shovel No. 217, working 23 days in the Culebra district, which excavated 38,851 cubic yards of rock, and 9,713 cubic yards of earth, a total of 48,564 cubic yards.

The second best record for the month was made by shovel No. 109, working 22 days in the Culebra district, which excavated 37,985 cubic yards of earth.

The best record for a shovel of the 70-ton class was made by shovel No. 109, working 22 days in the Culebra district, which excavated 37,985 cubic yards of earth.

Shovel No. 217, working in the Culebra district, made a high record for one day by excavating 3,040 cubic yards of rock on September 13.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best records for the month, and for one day, are shown in the following table:

BEST RECORDS FOR THE MONTH.

CULEBRA DISTRICT.

SHOVEL No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
217.....	9,713	38,851	48,564	23
109.....	37,985		37,985	22
223.....	8,664	27,219	35,883	25

EMPIRE DISTRICT.

254.....	19,136	12,998	32,134	24
226.....	6,450	22,429	28,879	23
209.....		26,036	26,036	24

PEDRO MIGUEL.

231.....		24,487	24,487	21½
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BEST RECORDS FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
226	Empire.....	Sept. 28	Rock.....	2,285
211	Empire.....	Sept. 18	Rock.....	2,196
215	Empire.....	Sept. 21	Rock.....	2,118
217	Culebra.....	Sept. 13	Rock.....	3,040
217	Culebra.....	Sept. 10	Rock.....	3,021
217	Culebra.....	Sept. 19	Rock.....	2,926
217	Culebra.....	Sept. 4	Rock.....	2,660
231	Pedro Miguel	Sept. 6	Rock.....	1,995

Wanton Destruction of Birds.

Complaint has been made that boys have been stoning and killing birds in the vicinity of settlements in the Canal Zone. The police have been instructed to apprehend all such offenders and to take them home to their parents for discipline, in order that the practice may be stopped.

United Spanish War Veterans.

On Sunday, October 13, Chagres Camp, No. 1, will hold its regular monthly meeting at Gatun lodge hall, at 1 p. m. A report of the ninth annual convention will be made by Past Commander and Delegate W. D. Rogers, and other business will be taken up.

At 9 a. m., on the same date, the camp will join hands with the ladies' auxiliary in a

sightseeing tour of the Gatun Locks on a special train starting from Gatun station.

All members, eligibles for membership, and ladies are invited to attend. Members living at Cristobal must leave on the 6.50 a. m. train from Colon, and those residing at towns toward Panama must leave on the first train.

PERSONAL.

Mr. S. B. Williamson returned from leave of absence on the *Colon*, which arrived at Cristobal on Thursday, October 3.

Among the passengers arriving on the *Cristobal* on Saturday, October 5, were Mrs. George W. Goethals, Major Chester Harding, Mrs. Harding, and Miss Katherine Harding.

Mr. W. G. Comber sailed on the *Colon*, on Wednesday, October 9, for New York, and from there will sail for Europe, on his annual leave of absence.

Mr. A. S. Zinn sailed on the United Fruit Company's steamer *Parismina* on Thursday, October 3, on annual leave.

Assignment of Canal Zone Teachers.

The following assignment of teachers of the white schools in the Canal Zone have been made:

Ancon—Empire high schools—Charles C. Carr, principal; Frederika Hine, Mabel M. Reid, Amelia C. de Lassus.

Ancon—Mildred O. Bates, principal; Mall-ye A. DeCamp, Virginia Best, Jessie Wilson Clark, Annie E. Stone, Etta Reed.

Corozal—Anna Mosteller.

Pedro Miguel—Ida O. Erickson, principal; Grace D. Snediker, Shirley C. Dorsey.

Paraiso—Marie Birmingham.

Culebra—Jennie M. Dunlap, principal; Helen C. Nason.

Empire—Elise Cage, principal; Ida B. Potts, Mary M. Shea, Dove L. Prather, Mary Edmonds, Shellie M. Dunn.

Las Cascadas—Sara D. Elwell.

Bas Obispo—Curraleen C. Smith.

Gorgona—Grace E. McCray, principal; Lydia A. Beeler, Clara L. Voyles, Edna M. Spicer, Florence M. Dildine.

Gatun—Jessie E. Daniels, principal; Archie Pratt, Cora E. Sessions, Bertha H. Mallory, Virginia Paul, Wenonah A. Whiting.

Cristobal—Helen L. Daniels, principal; Emma M. Cobban, Odina J. L. Frost, Charlotte Carter, Edith MacI. McCarthy, Clelia D. Crespi.

Toro Point—Bertha Hale.

Porto Bello—Mary C. Stanners.

Substitute teachers—Georgia T. Munroe, Dora Nielsen.

Road Improvements.

It has been decided to use the samples of road oil, purchased for trial on the Sabanas road, on the Zone boundary road, beginning at Ancon post-office, and running to Balboa, continuing until the supply is exhausted. The sum of \$1,500 was set aside for the road oil experiment, and about half of the amount was expended in the purchase of 120 barrels of oil, representing three different makes. Before the oil is applied, however, the boundary road will be resurfaced and rolled, and this work will probably be done early in the dry season. The municipal engineering force of the Pacific Division is now at work improving the Tumba Muerta road, which branches off from the Sabanas highway, and it is expected that work on both of these roads

will be completed about January 1. A section of the Balboa road, from a point west of the commissary to the bridge over the tidal inlet, has recently been resurfaced and rolled.

Boxer Under Arrest.

A cablegram received on Monday, October 7, advises that Charles W. Boxer, who is wanted here for the embezzlement of the funds of a secret society, entrusted in his keeping, has been arrested at San Francisco, and will be returned to the Canal Zone for trial.

Missionary Convention.

The preparations for the missionary convention to be held at Empire on Friday, October 25, are about completed. The Ladies' Aid Society of the Empire Christian League has arranged an interesting program and several speakers have promised their services. Invitations have been issued to all the organizations of women engaged in Christian work, and transportation has been granted to a limited number of members of each society. The program will include outlines of missionary work of the different churches and denominations; their methods, systems, and results. The convention is in entire accord with the world movement toward Christianity and church unity, and it is expected that this, the first religious convention of women to be held in the Canal Zone, will be met with the hearty response and cooperation of all members of such societies.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Bas Obispo, C. Z., Sunday, October 13, at 6 p. m. The program follows:

1. March—*Cavalier*.....Harris
2. Selection—*The Red Widow*.....Gebest
3. Intermezzo—*Indian Summer*.....Moret
4. Overture—*If I Were King*.....Adam
5. Popular song—*There's A Girl In Havana*.....Goetz
6. Grand fantasia—*Home, Sweet Home, the World Over*.....Lampe
7. Waltz—*Impassioned Dream*.....Rosas
8. Popular selection—*The Broadway Review*.....Lampe
9. March—*Spirit of Independence*.....Holzman

CHARLES E. JENNINGS, Musical Director.

The next concert will be given at Culebra, October 20, at 5 p. m.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending October 16, 1912 (75th meridian time):

DATE.	Low		High		Low	
	A.M.	A.M.	A.M.	P.M.	P.M.	P.M.
October 10.....		3:00	9:15	3:26	9:34	
October 11.....		3:45	10:00	4:10	10:20	
October 12.....		4:35	10:43	4:51	11:02	
October 13.....		5:06	11:25	5:33	11:43	
			P.M.			
October 14.....		5:47	12:08	6:13		
October 15.....	12:26	6:27	12:50	6:57		
October 16.....	1:12	7:10	1:37	7:42		

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, October 5, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigla.	Alhajuela	Gamboa.	Gatun Lake.
Sun, Sept. 29.....	127.3	93.6	48.3	47.9
Mon., Sept. 30.....	126.9	93.5	48.8	48.0
Tues., Oct. 1.....	127.1	93.5	48.6	48.1
Wed., Oct. 2.....	127.3	93.5	48.6	48.1
Thurs., Oct. 3.....	128.8	94.0	49.0	48.2
Fri., Oct. 4.....	127.9	94.0	49.2	48.2
Sat., Oct. 5.....	126.9	93.3	48.7	48.2
Height of low water to the nearest foot.....	125.0	91.0	44.0	

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

Arrangements have been made for one month's trial service of the "Current event" slides for the division of clubhouses. Four slides, depicting important events of the day, will be mailed daily from New York.

The standing of the Isthmian bowling league on Monday, October 7 was, as follows:

	Won.	Lost.	P. C.
Empire.....	3	0	1.000
Gorgona.....	2	1	.666
Gatun.....	2	1	.666
Cristobal.....	1	2	.333
Corozal.....	1	2	.333
Culebra.....	0	3	.000

The standing of the Isthmian basketball league on Monday, October 7 was, as follows:

	Won.	Lost.	P. C.
Gorgona.....	1	0	1.000
Empire.....	1	0	1.000
Gatun.....	0	1	.000
Cristobal.....	0	1	.000
Corozal.....	0	0	.000

The moving picture schedule for the week beginning October 14 is, as follows: Monday, Culebra; Tuesday, Corozal; Wednesday, Empire; Thursday, Gorgona; Friday, Cristobal; Saturday, Gatun.

COROZAL.

Corozal's first game of the Isthmian tenpin league was rolled on the local alleys against Gorgona last Saturday night, October 5, with the following results:

	1	2	3	Corozal	1	2	3
Sims.....	161	165	174	Dalton.....	143	123	114
King.....	137	177	139	Bordt.....	129	143	157
Low.....	157	147	136	Peterson.....	145	165	142
McCona'h'y	111	149	136	Souder.....	159	163	150
Roper.....	157	165	174	Coonly.....	134	192	224

Total.... 723 803 759 710 786 787
Team average, 762. Team average, 761.

Corozal will bowl Cristobal on the Cristobal alleys on Saturday, October 12.

Mr. Reed Morris has been elected captain of the Corozal basketball team and much interest was shown in the practice game on Thursday night.

The Corozal team plays the Gorgona basketball team on Saturday, October 12, at Gorgona.

The following is the standing of those participating in the local handicap pool tournament:

Handicap.	Name.	Games played.	Won.	Lost.	P. C.
60	Patrick.....	6	5	1	.832
60	Souder.....	5	4	1	.800
60	Stagg.....	8	6	2	.750
80	Tougher.....	4	3	1	.750
70	Stapler.....	8	4	4	.500
60	White.....	11	7	4	.638
60	Kent.....	8	4	4	.500
80	Besile.....	9	4	5	.444
50	Underwood.....	8	3	5	.375
60	Shaffer.....	6	2	4	.333
80	Roberts.....	6	1	5	.167
80	Hostetter.....	9	1	8	.111

High runs, Roberts and White 14 each.

EMPIRE.

The Culebra bowling team was defeated by the Empire team on October 5, by the following scores:

	Empire.	Culebra.
Gustavson.....	168 217 181	Case..... 176 183 180
Potter.....	200 154 145	Mengel..... 141 153 173
Edwards.....	166 174 179	Cushinger..... 162 192 148
Pinney.....	125 193 155	Anderson..... 151 172 145
Huson.....	167 155 174	Dougherty..... 179 189 118

Totals.... 826 893 834 809 889 764

The boys' bowling team of Corozal played a double match game with the Empire boys on Saturday afternoon. The Empire team won the duckpin match, but lost the tenpin game.

The boys' regular hours from now on will be Mondays, Wednesdays and Saturdays from 3.30 to 5 p. m. Mondays will be open for indoor baseball, basketball practice and gymnasium exercises; Wednesdays for bowling. There will be reading room privileges during the same hours on Fridays, and Saturdays will be reserved for contests with other teams, hikes into the country, etc.

The high school girls are showing the benefit of practice at the game of basketball.

An advanced Spanish class will start this week.

The chess match between the Culebra and Empire clubs at Empire, on October 5 resulted, as follows:

Culebra.	Won.	Lost.	Empire.	Won.	Lost.
Shutes.....	1	1	Smith.....	1	1
Vogel.....	2	0	Compton.....	2	0
Minner.....	1 1/2	1/2	Pulsifer.....	1 1/2	1/2
Dubois.....	2	0	Verner.....	2	0
Beaman.....	2	0	Coolsby.....	0	2
McClure.....	1	1	Capt. Knight.....	1	1
Rose.....	0	2	Dr. Sherrard.....	2	0

Totals..... 9 1/2 4 1/2 4 1/2 9 1/2

Mr. Russell is back from Porto Bello and will re-open all gymnasium classes at once. The punching

bag is now ready for use. Fencing classes will start next week. Those who were in the classes formerly may continue. New men who wish to enter, kindly watch for notice. If any night men would like to have a class in the late afternoon, they are requested to hand their names to the secretary.

Basketball practice will occur twice a week.

All men are invited to enter the October handicap pool tournament.

The high scores in tenpins the past week were; Edwards, 223; Gustavson, 220; Pearson, 206; Huson, 202 and 200. Duckpins—Steele, 117 and 101.

GORGONA.

Gymnasium classes are organized, and if any men in Gorgona wish to join they should see Mr. Watson, the physical director. A married men's class will be organized to be held between the hours of 5.15 to 6 p. m.

The bowling alleys were reopened on Monday, September 30, and a prize was given for the high score, which was made by Mr. Roper.

The local league will continue the unrolled games due to the closing of the alleys.

The chorus began rehearsals on Wednesday night, October 9.

An informal social will be given on Friday night, October 11. A program has been arranged, and home made cake and other refreshments will be served. This social is open to everybody in Gorgona, free of charge.

The Corozal basketball team will play at Gorgona on Saturday evening, October 12.

Culebra will bowl at Gorgona on Saturday evening, October 12. Every member at Gorgona should plan to be in town and help Gorgona win.

GATUN.

About 200 people were present at the opening basketball game on Saturday evening, October 5. The score resulted: Gorgona 22, Gatun 17. The lineups were: Gorgona,—Forwards, Ridge and Loudon; center, Christiansen; guards, Stevens and Simka. Gatun,—Forwards, Fitzpatrick, Wright and Whiston; center, Neeley; guards, Mitchell and Huber. Umpire, Rice of Cristobal. Scorers, Webb and Kuntz. Timer, Fomon.

H. H. Hodges won the umbrella given as a prize for the high single game at the reopening of the bowling alleys on Monday evening, September 30. Score, 204. O'Meara's score was 203, and Swallow had two 200 games.

The three-cushion billiard tournament, which has been the means of making the game popular at Gatun for the past few weeks, is being brought to a close. The present standing is, as follows:

	Won.	Lost.		Won.	Lost.
Wurster.....	9	0	Gamble.....	7	6
DePoorter.....	9	1	Bellinger.....	6	6
Townley.....	8	2	Long.....	5	8
Neeley.....	8	3	Meise.....	5	8
Dewey.....	6	3	Eggleston.....	3	10
Cheeks.....	7	4	Myers.....	2	11
Jackson.....	6	6	Heine.....	0	12

Gatun took two out of three games of bowling at Cristobal on Saturday night, October 5.

The following have signed up for the married men's gymnasium class, which meets at 5.30 p. m., twice a week; Windes, Lydecker, Luckey, Purdy, Smith, F. Carter, Bailey, Gerchow, Grier, Fomon, and Ourand.

A root beer fountain has been installed at the refreshment counter. Ice cream sodas are also sold.

An order for new books will be sent to the United States this week. Suggestions are invited.

The following are members of the advanced classes in Spanish and shorthand:

Advanced Spanish—E. S. Waid, G. E. Duckworth, Dr. Farmer, Mr. Hanson, Dr. Burdett, G. E. Conley and S. Dennis.

Elementary Spanish—K. M. Ashley, R. Burns, T. W. Sherrard, J. A. Muller, C. Cornwell, M. J. Dunn, C. E. Mead, C. W. Roberts, A. C. Miller, H. J. Zamp, H. Golden, Dr. Crandall.

Shorthand—Ashley, Burns, Miller, and Swanson.

CRISTOBAL.

The lineup of the basketball game on Saturday night, October 5, between Empire and Cristobal was, as follows:

Empire.	Cristobal.
Rowan.....	left forward..... Mathues
King.....	right forward..... Morton
Hepler.....	center..... Capt. Howe
Adams.....	right guard..... H. Schwallenberg
Capt. Greening.....	left guard..... Hughes
Cousineau.....	relieved Hughes, and Weiss relieved Schwallenberg in the second half.

Score: Empire, 34; Cristobal, 18.

Field goals—Rowan, 7; Kind, 3; Helper, 1; Greening, 4; Morton 2; Mathues, 3; Howe, 2.

Free throws—King, 4; Howe, 4.

The next practice nights for basketball will be October 15 and 17.

In the local ragtime tournament, the following teams are leading: Tenpins—Bullard and Collins, 1181;

duckpins—Bullard and Herrington, 605; candlepins—Barrett and Herrington, 658.

Gatun defeated the local bowling team in two games out of three on Saturday night. The scores follow:

Gatun.	Cristobal
Swallow.....	160 158 188
Morrissey.....	147 112....
Rabbitt.....	211 145 184
Hodges.....	195 205 221
Oettli.....	146 155 163
O'Meara.....	163
Barrett.....	178 183 169
Burns, T.....	177 155 134
Collins.....	131....
Bullard.....	169 158 187
Louch.....	181 141....
Gibson.....	165 161

Totals.... 859 775 919 836 802 794

Hodges rolled in good form and made a total of 621 for his three games.

PORTO BELLO.

Fifteen men enrolled as members in a class in "First aid to the injured" on Friday night, October 4. Arthur W. Wright was elected president of the class, Vernon E. Sauvan, secretary, and James L. Tolar, instructor. The class will meet Tuesday evenings. A mixed class among the children was also organized on the same subject. The children's class meets on Wednesday evenings.

Moving picture entertainments were resumed this week after an interval of about three months' waiting on the arrival of the new picture machine.

A handicap pool tournament started on Monday night, October 7, with 14 entries. The tournament will close with a "smoker" on Saturday night, November 16, at which time prizes will be awarded.

Work is going forward on the rifle range for the Porto Bello gun club. The range will be ready for use early in October.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, and Colon, during the week ending October 5:

Sixaola, September 29, from New York, with 453 cases electrical material, 171 packages track material, for superintendent of erection; 1,451 bags oats, 12 bales hose, for stock.

Navigator, September 29, from Baltimore, with 15,000 cases dynamite, for stock.

Prinz Joachim, September 30, from New York, with 16 drums lime, 12 cases hardware, for stock; 548 barrels sand, for Mechanical Division; 170 packages anchor bolts, for fortifications.

Almirante, October 2, from New York, with 14 cases copper rods, seven kegs bolts and nuts, for superintendent of erection; 31 cases tape fuse, 27 cases wire cloth, 24 cases deck brushes, for stock.

Cartago, October 3, from New Orleans, with 51 barrels brake shoes, 2,068 pieces lumber, for Mechanical Division; 400 cases kerosene, 160 drums kerosene, 725 pieces cast iron pipe, 413 bags feed, 441 pieces piling, 1,112 pieces lumber, 67 boxes library paste, 17 coils rope, 19 rolls cotton duck, for stock.

Colon, October 3, from New York, with 51 bundles castings, five cases testing machine, for Mechanical Division; 11 cases oil, 20 cases electrical material, for superintendent of erection; 77 cases signal material, for Panama Railroad Company; 250 bundles brooms, 68 cases caustic soda, 36 crates fire brick, 198 kegs bolts and rivets, 30 cases metal polish, 380 pieces oak lumber, 500 rolls roofing paper, 21 cases tools, 11 bales life preservers, 30 cases varnish, 10 barrels chipped soap, 10 cases paint, 52 cases paper, 20 cases lubricating oil, 12 cases rubber hose, 16 cases toe calks, for stock; and a miscellaneous cargo, the whole consisting of 2,370 packages, weighing 320 tons.

Misdirected Letters.

ANCON, C. Z., October 9, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the director of posts, and may be secured upon request of the addressee:

Banks, W. M.	Hess, J. E.
Beagle, F. W.	Lachosky, Joseph A.
Beckstedt, Lorne	Lenerett, Hugh
Berouse, T. L. (Berouse)	Matejui, J. Almi
Bert, A.	McGowan, Miss Anna
Berthold, Richard	Mora, Edward
Brodrick, Tim	Mullens, R.
Calloway, D.	Neuman, J. B. A.
Carpenter, Carroll P. (3)	O'Byrne, Dr. F. G. & Bro. (2)
Carroll, Mrs. M. J. (pkg.)	Payne, Perry
Clutter, C. W.	Reese, George T.
Conlan, Charles	Roberts, Robert
Connell, Dr. A. G.	Roquebert, C.
Dixon, T. C.	Stine, Charles
Dutari, J. M. (catalog)	Swanson, Mrs. K. A.
Edwards, Howard E.	Townsend, Harold
Erwin, James	Van Densen, S. A.
Gamwell, L. M.	Wahler, Urban
Gonsalves, George	Wilkeu, Samuel
Guild, Charles	Wilson, Miss Ida
Gunther, John H. (Reg.)	Woolworth, P. T.
Hernandez, Marcelino (pkg.)	

OFFICIAL CIRCULARS.

Transfer of Equipment.

CULEBRA, C. Z., September 27, 1912.

CIRCULAR No. 370 D:

1. Circulars Nos. 356, 370, 370-A, 370-B, and 370-C, and Examiner of Accounts Circular No. 21, are hereby revoked and the following rules will hereafter govern the transfer of equipment and the fixing of the transfer value thereof:

2. Request for the transfer of equipment chargeable to plant account, and of shop machines, between the various departments and divisions of the Commission and between the Commission and the Panama Railroad Company, will be submitted to the Chairman and Chief Engineer on form C. E. 299-1, seven copies to be forwarded for each request.

3. Until a supply of form C. E. 299-1 is received, form C. E. 299-a (original) and 299-b (duplicate) will be used, except that the address therein will be changed to the Chairman and Chief Engineer.

4. The inspector of shops is charged, under my direction, with investigating and recommending action to be taken on requests for the transfer of equipment.

5. Equipment belonging to the Panama Railroad Company that is lent to the Commission will be covered by memorandum receipt taken from the department or division of the Commission using it. Equipment belonging to the Commission that is lent to the Panama Railroad Company will be invoiced to the depot quartermaster, who will obtain memorandum receipt therefrom from the general superintendent of the Panama Railroad Company.

6. The general superintendent of the Panama Railroad Company and the head of each department and division of the Commission having Panama Railroad Company equipment in its possession will submit a monthly report to the chief quartermaster on form QMD 61, showing this equipment by classes and numbers. Form QMD 61 will be submitted monthly by departments and divisions of the Commission, showing numbers and classes of Commission equipment in their service, to the superintendent of the Mechanical Division. The Panama Railroad Company will submit a monthly report on the same form, showing all Commission equipment in its service, to the superintendent of the Mechanical Division, furnishing the chief quartermaster with a copy thereof.

7. When equipment is transferred between departments and divisions of the Commission and between the Commission and the Panama Railroad Company, the division last using the equipment will pay for such repairs as are necessary to put the equipment in operating condition. If further repairs are required by the division to which the equipment is transferred, such expense will be borne by the latter division.

8. When any piece of equipment is transferred from one division or department to another, there will be transferred with it the authorized tools and oiling equipment, boxes and chains with locks and keys for securing tools and oiling equipment, water cooler, etc.

9. Copies of form QMD 4 covering transfers of plant units, copies of all completed surveys covering demolition, destruction, dismantling, or return to stock, will be submitted by the accountable officer to the chief quartermaster as soon as the transfer or other change of status in equipment is effected, so that the equipment records of the chief quartermaster will at all times be complete.

10. All equipment chargeable to plant account, and all shop machines, excepting floating equipment, will be transferred at its original cost price, less one per cent for each month it has been in service; provided, that the net credit to the division releasing the equipment shall not be less than 10 per cent of its original

cost. If the cost of repairs incident to the transfer, deducted from the transfer value determined by this rule, leaves an amount less than 10 per cent of the original cost, the division releasing the equipment will invoice to the division receiving it such portion of the cost of the repairs as is necessary to make its credit 10 per cent of the original cost.

11. The transfer value of floating equipment will be fixed in each case by the board of local inspectors and the surveying officer.

12. The value of equipment transferred between units of work within a division will be determined as prescribed for transfers between divisions.

13. This circular does not apply to the obtaining by departments and divisions of articles in the obsolete storehouse of the Quartermaster's Department.

14. Transfers effected by oral authority of the Chairman and Chief Engineer must in every case be confirmed by formal request on form C. E. 299-1, which will be submitted by the division receiving the equipment; no transfer will be considered as officially authorized until this shall have been done.

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Local Treasurer, Panama Railroad Company.

PANAMA RAILROAD COMPANY.

COLON, R. P., October 4, 1912.

To ALL CONCERNED:

Effective at once, the title of Mr. R. H. Wardlaw, cashier, Panama Railroad Company, is changed to that of local treasurer, Panama Railroad Company, and all concerned will kindly address him accordingly, in future.

J. A. SMITH, General Superintendent.

Cold Storage Prices Unchanged.

The prices of cold storage articles at the commissaries, as printed in *The Canal Record* of October 2, remain unchanged.

Rainfall from September 1 to 30, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	2.42	26	8.38
Balboa.....	2.28	26	10.01
*Miraflores.....	3.6	27	14.45
Pedro Miguel.....	3.06	26	10.76
Rio Grande.....	3.51	26	15.10
<i>Central Section—</i>			
Culebra.....	3.29	26	14.12
*Camacho.....	4.17	22	14.14
Empire.....	2.44	23	13.78
Gambao.....	1.70	30	12.75
*Juan Mina.....	2.40	25	14.27
Alhajuela.....	1.19	26	9.12
*El Vigia.....	1.98	23	10.10
*Gorgona.....	2.69	30	12.80
*Frijoles.....	3.25	2	11.93
*Trinidad.....	2.28	5	11.36
*Monte Lirio.....	1.40	14	9.39
<i>Atlantic Section—</i>			
Gatun.....	2.45	2	7.84
*Brazos Brook.....	2.72	3	9.11
Colon.....	2.13	2	12.23
Porto Bello.....	4.02	14	15.01

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight.

WEATHER CONDITIONS, CANAL ZONE, SEPTEMBER, 1912.

The rainfall for September was above the normal over the Pacific half of the Isthmus, but deficient over the Atlantic half. Monthly totals ranged from 7.84 inches at Gatun to 15.10 inches at Rio Grande. Heavy general rains occurred on the 2d, 3d, 23d, 26th, and 27th.

During a heavy shower at Rio Grande, on the 21st, 3.10 inches of rain fell in one hour, establishing a new maximum hourly record for that station.

Mean temperature, relative humidity, atmospheric pressure, and cloudiness were about normal, but the total wind movement was slightly in excess of the monthly average.

Of the fogs observed, 54 per cent were dissipated by 6.30 a. m., 82 per cent by 7.30 a. m., and 98 per cent by 8.30 a. m.

The following table summarizes the weather conditions for the month:

STATIONS.	Press're (reduced to mean of 24 hours.)	Temperature.						Mean relative humidity.	Precipitation.			Wind.			
		Mean.	Maximum.	Date	Minimum.	Date.	Total inches.		Station average.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Colon. ...	29.840	79.4	89	Sept. 17	71	Sept. 25	57	12.23	12.53	22	5,473	S. E.	37	W. E.	Sept. 2
Culebra...	29.840	74.7	96	Sept. 1	67	Sept. 24	93	14.12	11.23	20	3,975	N. W.	32	N. E.	Sept. 23
Ancon....	29.822	79.4	92	Sept. 9	68	Sept. 24	91	8.38	7.46	20	4,451	N. W.	31	N. E.	Sept. 23

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Advance.....	P. R. R. Thursday.....	Oct. 3
Panama.....	P. R. R. Wednesday.....	Oct. 9
Allianca.....	P. R. R. Tuesday.....	Oct. 15
Colon.....	P. R. R. Monday.....	Oct. 21
Advance.....	P. R. R. Saturday.....	Oct. 26
Panama.....	P. R. R. Saturday.....	Nov. 2
Allianca.....	P. R. R. Friday.....	Nov. 8
Colon.....	P. R. R. Thursday.....	Nov. 14
Advance.....	P. R. R. Wednesday.....	Nov. 20
Panama.....	P. R. R. Tuesday.....	Nov. 26
Allianca.....	P. R. R. Tuesday.....	Dec. 3

CRISTOBAL TO NEW YORK.

Advance.....	P. R. R. Tuesday.....	Oct. 15
Panama.....	P. R. R. Monday.....	Oct. 21
Allianca.....	P. R. R. Sunday.....	Oct. 27
Colon.....	P. R. R. Saturday.....	Nov. 2
Advance.....	P. R. R. Thursday.....	Nov. 7
Panama.....	P. R. R. Thursday.....	Nov. 14
Allianca.....	P. R. R. Wednesday.....	Nov. 20
Colon.....	P. R. R. Tuesday.....	Nov. 26
Advance.....	P. R. R. Monday.....	Dec. 2

NEW YORK TO COLON.

Santa Marta.....	U. F. C. Wednesday.....	Oct. 2
Prinz August Wilhelm.....	H. A. Saturday.....	Oct. 5
Turrialba.....	U. F. C. Saturday.....	Oct. 5
Metapan.....	U. F. C. Wednesday.....	Oct. 9
Tivives.....	U. F. C. Saturday.....	Oct. 12
Clyde.....	R. M. Saturday.....	Oct. 12
Prinz Sigismund.....	H. A. Saturday.....	Oct. 12
Zacapa.....	U. F. C. Wednesday.....	Oct. 16
Prinz Joachim.....	H. A. Saturday.....	Oct. 19
Sixaola.....	U. F. C. Saturday.....	Oct. 19
Almirante.....	U. F. C. Wednesday.....	Oct. 23
Orotava.....	R. M. Saturday.....	Oct. 26
Prinz Eitel Friedrich.....	H. A. Saturday.....	Oct. 26
Santa Marta.....	U. F. C. Wednesday.....	Oct. 30

COLON TO NEW YORK.

Almirante.....	U. F. C. Thursday.....	Oct. 10
Prinz Eitel Friedrich.....	H. A. Monday.....	Oct. 14
Carrillo.....	U. F. C. Tuesday.....	Oct. 15
Oruba.....	R. M. Tuesday.....	Oct. 15
Santa Marta.....	U. F. C. Thursday.....	Oct. 17
Prinz August Wilhelm.....	H. A. Monday.....	Oct. 21
Turrialba.....	U. F. C. Tuesday.....	Oct. 22
Metapan.....	U. F. C. Thursday.....	Oct. 24
Prinz Sigismund.....	H. A. Monday.....	Oct. 28
Tivives.....	U. F. C. Tuesday.....	Oct. 29
Thames.....	R. M. Tuesday.....	Oct. 29

NEW ORLEANS TO COLON.

Atenas.....	U. F. C. Saturday.....	Oct. 5
Heredia.....	U. F. C. Wednesday.....	Oct. 9
Parismina.....	U. F. C. Saturday.....	Oct. 12
Abangarez.....	U. F. C. Saturday.....	Oct. 19
Cartago.....	U. F. C. Wednesday.....	Oct. 23
Atenas.....	U. F. C. Saturday.....	Oct. 26
Heredia.....	U. F. C. Wednesday.....	Oct. 30

COLON TO NEW ORLEANS.

Cartago.....	U. F. C. Thursday.....	Oct. 10
Atenas.....	U. F. C. Thursday.....	Oct. 17
Heredia.....	U. F. C. Wednesday.....	Oct. 17
Parismina.....	U. F. C. Thursday.....	Oct. 24
Abangarez.....	U. F. C. Thursday.....	Oct. 31
Cartago.....	U. F. C. Thursday.....	Oct. 31
Atenas.....	U. F. C. Thursday.....	Nov. 7
Heredia.....	U. F. C. Thursday.....	Nov. 7

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston at 10 a. m., on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* sail at 2 p. m., and call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending October 5:

Arrivals—September 30, *Quilpie*, from Valparaiso; October 1, *Ecuador*, from Guayaquil; October 1, *U. S. S. Cleveland*, from Corinto; October 1, *Huallaga*, from Callao.

Departures—September 29, *Pennsylvania*, to San Francisco; September 30, *Limari*, to Valparaiso; October 1, *Urubamba*, to Callao; October 2, *U. S. S. Cleveland*, to Corinto; October 4, *Chile*, to Guayaquil; October 5, *Stanley Dollar*, to San Francisco.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, OCTOBER 16, 1912.

No. 8.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Canal Medals.

Seven hundred and thirty-five Canal medals earned by Canal and Panama railroad employes during the period from 1909 to 1911, inclusive, have been received on the Isthmus, and will be distributed within the next few days. The service bars for four and six years of continuous service will probably be here before the end of the month.

Permanent Structures.

Mr. Frank W. Reynolds, superintendent on the Isthmus for Mr. Austin W. Lord, the architect employed by the Isthmian Canal Commission to prepare plans for the permanent buildings for the use of the operation and maintenance forces of the Canal, arrived on October 7, bringing with him one-fourth inch scale working drawings of the hydroelectric station at Gatun Spillway, showing the structural steel, as worked out by the engineers on the Isthmus, adapted to local conditions. He also brought drawings of the operating houses at Gatun and Miraflores Locks, which will be identical in construction, and plans for the operating house at Pedro Miguel Lock, in addition to considerable data concerning building materials.

Drawings of the permanent Administration building to be located at the new town of Balboa are expected shortly, when work in preparing the site will be begun. The new building will have 75,000 square feet of floor space, and is to cost not to exceed \$375,000, including \$25,000 for that part assigned to the archives.

Repairs to Crane at Mount Hope Wharf.

The steam cantilever cargo-handling crane at Dock 14, Mount Hope, is being scaled and repainted, and a large part of the woodwork is being replaced, including the footbridge, which extends the length of the cantilever span, 355 feet 11 inches. The crane is built with arms extending equal distances beyond the central support, the top of which is 78 feet above the supporting track. Since the

crane was put in use in February, 1906, it has handled approximately 230,720 tons of cargo.

Increase in Concrete Estimate at Gatun Locks.

Owing to the greater depth of the foundations in the approach walls at Gatun Locks, the estimate for the total amount of concrete necessary to be placed at that point has been increased by 50,000 cubic yards, making the estimate as revised 2,050,000 cubic yards. On October 1, 1912, the concrete work in the locks at Gatun was 92.87 per cent completed.

Panama Railroad Apartment House.

All of the storerooms on the first floor of the Panama railroad apartment house, corner of Front and Eleventh streets, Colon, have been rented. All of the flats on the second and third floors of the building are rented to married employes of the railroad and Canal Commission.

Retention of Metal Checks.

Metal checks in the possession of gold employes of the Canal Commission and the Panama railroad may be retained by them hereafter, upon leaving the service, as souvenirs of the Canal work, the charge of 50 cents for each check having been abolished upon recommendation of the Disbursing Officer, approved by the Chairman. The status of the checks issued to silver employes is not affected by the new arrangement. The present checks are circular in form, and 180,000 of them were manufactured, numbered from one up. Of these, up to about 165,000 have been issued to the various timekeepers for use on the work. The numbers from one to 20,000 were issued to contract men and special laborers, but above that figure they were given out without regard to the gold and silver distinction. There have been a number of issues of brass checks since the beginning of the work in 1904, in square, diamond-shaped, and star-shaped designs.

Conversion of Sand Barges.

Two barges, formerly in the Atlantic Division rock and sand transportation service, which were brought around South America to Balboa a few months ago by the tug *Reliance*, will be converted into dump barges to replace clapnets Nos. 8 and 10, which are no longer serviceable. These barges are of larger capacity than the clapnets, and contain from 500 to 525 cubic yards of material each. It is estimated that the work of conversion will take about three months, and that they will be good for five years' service thereafter.

Postal Business and Canal Zone Revenues.

The total amount of money orders issued in the Canal Zone during the month of September was \$369,094.81, of which \$301,934.08 was payable in the United States, \$66,141.18 in the Canal Zone, \$711.10 in Martinique, and \$308.45 in Costa Rica. The number of orders issued was 18,027, and

the average value was \$20.47. Money order fees amounted to \$1,765.75, and the amount paid and repaid to \$77,580.86. Postal sales amounted to \$6,894.75, and newspaper postage to \$11.74.

Revenue collections during the month of September were, as follows: Bicycle and chauffeur licenses, \$49; motor vehicle licenses, \$68; steamboat inspection, \$60; taxes, licenses, etc., \$14,216.86; total, \$14,393.86.

New Incline Track Out of Culebra Cut.

An additional incline track out of the lower end of Culebra Cut will be built to the east of the former site of Panama railroad bridge No. 57½, by the Central Division forces. Its construction is made necessary by the fact that the new bridge spanning the Cut will not permit the passage of a steamshovel or trackshifter, and gives but a 5-inch clearance for the wrecking crane. The new incline will have a 2.4 per cent grade, and will not permit the operation over it of loaded trains, made up of the usual number of cars without additional helper engine service. The track will serve as a reserve in case traffic over the present incline track out of the Cut at this end is interrupted.

Canal Zone Postal Savings Bank Transactions.

A statement of Canal Zone postal savings bank transactions at Canal Zone post-offices for the month of September, follows:

NAME OF OFFICE.	Postal savings certificates issued.	Postal savings certificates paid.
Ancon	\$7,584	\$7,728
Balboa	9,810	9,629
Bas Obispo	3,053	900
Corozal	13,470	8,850
Cristobal	7,042	12,340
Culebra	9,569	7,004
Empire	3,046	2,484
Gatun	9,573	7,816
Gorgona	15,101	15,095
Las Cascadas	5,695	5,557
Matachun	380	382
Miraflores	5,535	1,824
Paraiso	7,756	3,687
Pedro Miguel	12,879	7,563
Cristobal, Sta. A.	550	610
Cristobal, Sta. B.	743	380
Total	\$111,786	\$91,999

Preparations for Tourist Season 1912-1913.

Arrangements are being made to move the lecture room, containing the model of Pedro Miguel lock, and that of Gatun Dam, now in the Administration building at Culebra, to the public market building, situated in West Culebra, near the railroad station. A section of this building, containing about 1,200 square feet of floor space, and capable of seating 120 people, will be divided off by a picket partition. It is proposed also, to install the lunch counter and soda water apparatus, formerly in the Commission clubhouse, in the new lecture room, for the convenience of tourists and other visitors.

The construction of an additional sight-seeing car has been authorized. During the busiest part of the last tourist season, other

(Continued.)

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.									Mixed by hand.	Large stone.	Total.
				2-cubic yard mixers.			1-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
	<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>
October 7	674	13.75	6	832	14.50	2	270	13.00	2	474	48.00	■	15	.....	2,265
October 8	928	20.25	6	800	12.50	2	259	13.00	2	456	45.50	5	20	.....	2,467
October 9	530	15.50	5	860	13.50	2	284	14.00	2	293	37.00	5	.....	.....	1,963
October 10	674	12.75	5	1,008	10.50	2	176	9.00	2	408	49.00	6	20	.....	2,286
October 11	468	18.42	6	924	14.00	2	194	11.50	2	428	48.00	6	15	.....	2,029
October 12	738	23.33	7	928	16.08	2	211	14.50	2	280	37.50	6	.....	.....	2,137
Total.	4,012	104.00	5.83	5,352	81.08	2	1,394	75.00	2	2,339	265.00	5.83	70	.....	13,167
Previously reported														3,693	1,247,368
Grand total														3,693	1,260,533

LABOR FORCE AND QUARTERS IN SEPTEMBER.

On September 25, there were 35,861 employes actually at work on the Canal and the Panama railroad, and of that number 29,571 were Canal employes. The gold force on the Canal, composed almost exclusively of white Americans, was 4,166. The force report for September 25 was, as follows:

DEPARTMENT.	SILVER EMPLOYES.*															Total silver.	Total gold.	Grand total.
	Artisans.					European laborers.		West Indian laborers.										
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.					
Const'n and Eng'ring.	4,138	10	12	241	815	3,263	3,704	584	118	375	5,189	2,517	1,254	21,220	3,150	24,400		
Civil Administration.....	142	.....	.....	2	4	26	.....	.....	.....	.....	.....	16	.....	184	302	486
Sanitation.....	677	.....	.....	.....	3	3	.....	.....	1	.....	.....	339	3	1,023	354	1,377
Quartermaster's.....	833	.....	.....	110	196	160	34	10	28	.....	204	706	12	2,293	176	2,469
Subsistence.....	669	.....	.....	2	.....	3	.....	.....	.....	.....	.....	.....	.....	674	50	7.4
Disbursements.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	19	26
Examinat'n of Accounts	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	85	89
Total.....	6,470	10	12	357	1,118	3,455	3,738	594	147	376	5,397	3,562	1,269	25,405	4,166	29,571		
Month previous.....	6,548	11	14	360	998	3,143	3,612	530	138	583	5,270	3,584	1,288	25,079	4,086	29,165		

Panama railroad force, 5,129; Panama railroad commissary force, 1,161. Total, 6,290. I. C. C. force, 29,571 Grand total, 35,861.

*All wages specified are in gold. †Includes three at 5 cents. ‡Includes six at 5 cents.

The force report for the Department of Construction and Engineering on September 25, follows:

DIVISION.	SILVER EMPLOYES.*													Total silver.	Total gold.	Grand total.
	Artisans.					European laborers.		West Indian laborers.								
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Chief Engineer	263	...	...	44	201	541	53	21	...	13	1,105	181	9	2,431	478	2,909
Mechanical	246	5	2	33	64	483	40	2	...	...	893	64	...	1,841	799	2,640
Atlantic	1,314	5	9	69	187	553	918	206	...	...	552	194	26	4,033	543	4,576
Central	945	...	...	25	117	395	1,565	69	94	362	734	1,760	129	6,195	568	6,763
Pacific	1,370	...	1	70	246	1,291	1,128	286	24	...	1,905	318	761	6,720	792	7,512
Total	4,138	10	12	241	815	3,263	3,704	584	118	375	5,189	2,517	1,254	21,220	3,150	24,400
Month previous	4,199	11	14	244	799	2,942	3,570	527	109	583	5,060	2,506	1,288	20,832	3,094	23,926

*All wages specified are in gold. †Includes three at 5 cents.

In addition, there were on the Isthmus on September 25th, 278 gold, and 1,915 silver employes of the McClintic-Marshall Construction Company; 35 gold, and 23 silver employes of the United States Steel Products Company, and four gold, and 21 silver employes of the Chicago House Wrecking Company, a total of 317 gold, and 1,959 silver employes not on the pay rolls of the Isthmian Canal Commission.

QUARTERS.

On September 30, there were 23,820 occupants of Commission quarters, as follows:

PLACE.	Gold.			Europeans.			West Indians.		
	Men	Women	Children	Men	Women	Children	Men	Women	Children
Balboa	214	32	42	378	...	...	382	...	...
Ancon	502	300	209	364	...	...	1,291	8	1
Corozal	443	90	78	303	...	...	376	5	5
Miraflores	22	2	1	556	3	11	159	6	4
Pedro Miguel	285	64	58	343	4	3	252	34	32
Paraiso	269	71	72	251	3	11	229	120	160
Culebra	332	176	171	436	44	80	356	127	173
Empire	490	297	281	470	60	69	456	130	187
Las Cascadas	166	97	91	85	17	28	269	152	120
Bas Obispo	72	45	25	98	21	32	163	66	72
Gorgona	685	236	284	77	7	15	390	106	185
Gatun	1,053	213	194	1,358	28	44	920	21	33
Cristobal	869	277	285	96	...	...	1,280	213	348
Toro Point	63	14	23	52	...	...	354	...	...
Porto Bello	62	25	26	89	...	...	227	2	2
Total	5,527	1,939	1,840	4,618	187	94	7,104	991	1,322

(*) Includes Sabanas police station, Taboga Island, Culebra station, Palo Seco, and Naos Island. (†) Includes Europeans and Asiatics. (‡) Includes 68 Panamanians. (§) Includes 36 East Indians. (||) Includes 60 Panamanians. (¶) Includes Matachin. (‡) Includes Colon Hospital. (¶) Includes four Asiatics.

Woman's Missionary Convention.

Arrangements have been practically concluded for the woman's missionary convention, which will be held at Empire on Friday, October 25. Mrs. A. A. Nellis will preside, and the program will be, as follows: Devotional exercises, conducted by Mrs. Carl H. Elliott, Cristobal; words of welcome, Mrs. H. A. A. Smith, Empire; response, Mrs. C. P.

Fortney, Gatun; paper on "Woman's Missionary work of the Episcopal Church," Miss J. Macklin Beattie, Ancon; intermission; "Hinduism," an illustrative exercise, by the Empire auxiliary; "Teaching missions to children in the Sunday school," Mrs. Stephen Witt, Gatun; "Missionary work in South America," Mrs. Harry Compton, Panama.

It is expected that Miss Cope will be at the meeting and speak of her work among the San Blas Indians. All women on the Isthmus are invited to be present.

National Revolver and Pistol Championship Match.

An open revolver and pistol championship match was held under the auspices of the Culebra Pistol Club at the range in Culebra on September 28 to October 6, both dates inclusive. The match was shot under the rules of the United States Revolver Association, and was held synchronously with matches at different ranges in the United States. The standard American target with 8-inch bullseye was used. There were five events, all at 50 yards, as follows:

NAME.	Matches.					Aggregate score.
	A	B	C	D	F	
C. B. Larzelere	429	439	489	162	177	1142.8
L. D. Cornish	425	447	...	175	153	...
M. W. Fox	416	429	463	169	167	1104.6
Jacob Bernson	402	442	494	172	185	1127.8
J. M. G. Watt	362	...	...	...	...	...
W. L. G. Perry	...	237	...	...	...	...
B. Balduf	...	...	278	...	114	...
J. W. Maddera	...	...	264	...	...	...
T. E. L. Lipsey	...	...	...	...	130	...

Match A, revolver match—C. B. Larzelere, first prize, gold medal; L. D. Cornish, second prize, silver medal; M. W. Fox, third prize, bronze medal.

Match B, pistol match—L. D. Cornish, first prize, gold medal; Jacob Bernson, second prize, silver medal; C. B. Larzelere, third prize, bronze medal.

Match C, rapid fire, military revolver—Jacob Bernson, first prize, gold medal; C. B. Larzelere, second prize, silver medal; M. W. Fox, third prize, bronze medal.

Match D, rapid fire, military revolver—L. D. Cornish, honor medal.

Match F, rapid fire, pocket revolver—Jacob Bernson, first prize, gold medal; C. B. Larzelere, second prize, silver medal; M. W. Fox, third prize, bronze medal.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the two weeks ending October 12:

DATE.	Hours worked.	Cubic yards.
September 30	7.20	2,405
October 1	7.10	2,083
October 2	8.05	2,171
October 3	8.25	2,588
October 4	7.50	2,855
October 5	7.00	2,483
Total	45.50	14,585
October 7	5.40	1,720
October 8	7.00	2,404
October 9	7.45	2,483
October 10	6.55	2,602
October 11	7.25	2,266
October 12	7.15	2,281
Total	42.00	13,756

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Culebra, on Sunday, October 20, 1912, at 5 p. m. The program follows:

1. March—King of the Air.....Everloft
2. Selection—The Red Widow.....Gebest
3.Humoresque.....Dvorak
4. Overture—If I Were King.....Adam
5. Intermezzo—Indian Summer.....Moret
6. Popular song—There's A Girl in Havana.....Goetz
7. Waltz—Impassioned Dream.....Rosas
8. Potpourri of popular songs.....Harris
9. March—Spirit of Independence.....Holzman

CHARLES E. JENNINGS, Musical Director.

The next concert will be given at Cristobal on October 23, 1912, at 8 p. m.

The next Sunday concert will be given at Hotel Tivoli, Ancon, on October 27, at 8 p. m.

CRISTOBAL DOCKS.

Construction of Sheds and Method of Handling Cargo.

Plans for the superstructures for the Atlantic terminal docks at Cristobal are being prepared, and a general idea of their construction, as well as the layout of the docks, is shown in the sketches accompanying this article. In considering the equipment for the new docks, the committee in charge, in its report of April 11, 1912, recommended, that

single pieces, too heavy to be handled by ships' booms, namely 10 tons, or over, could be taken care of by crane boats.

The design and construction of the docks have been carried on under the supervision of Lieut. Frederick Meais, Chief Engineer, Panama Railroad Company, and the preliminary investigations and dock construction has been in charge of Mr. Geo. H. Ruggles, dock engineer.

The dock and pier construction at present

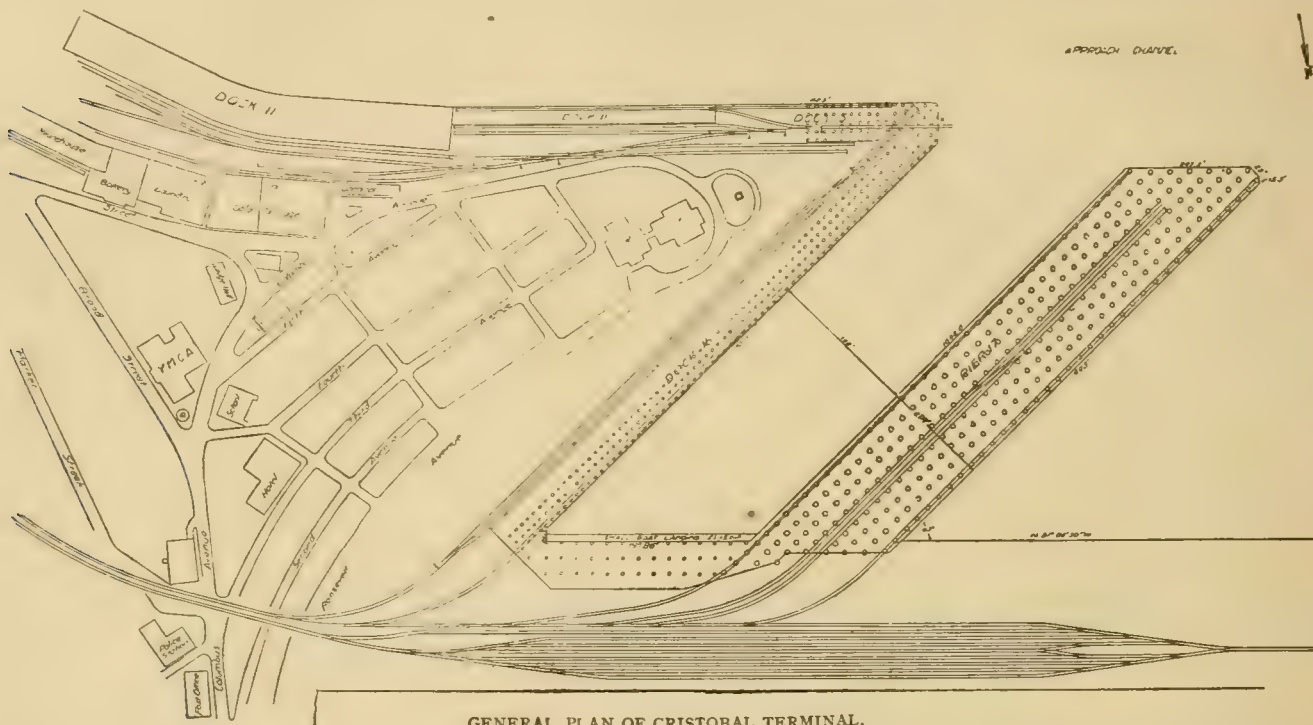
placing of the floor beams. The status of the work on October 1 was about, as follows:

Dock No. 16—All the caissons, and a greater part of the floor beams in place.

Pier No. 17—Most of the cylinders in place, but no work accomplished on the floor supports.

Dock No. 15—No work accomplished on this dock to date.

Dock No. 16 will have a face line 1,073 feet long. The shed to be erected on it,

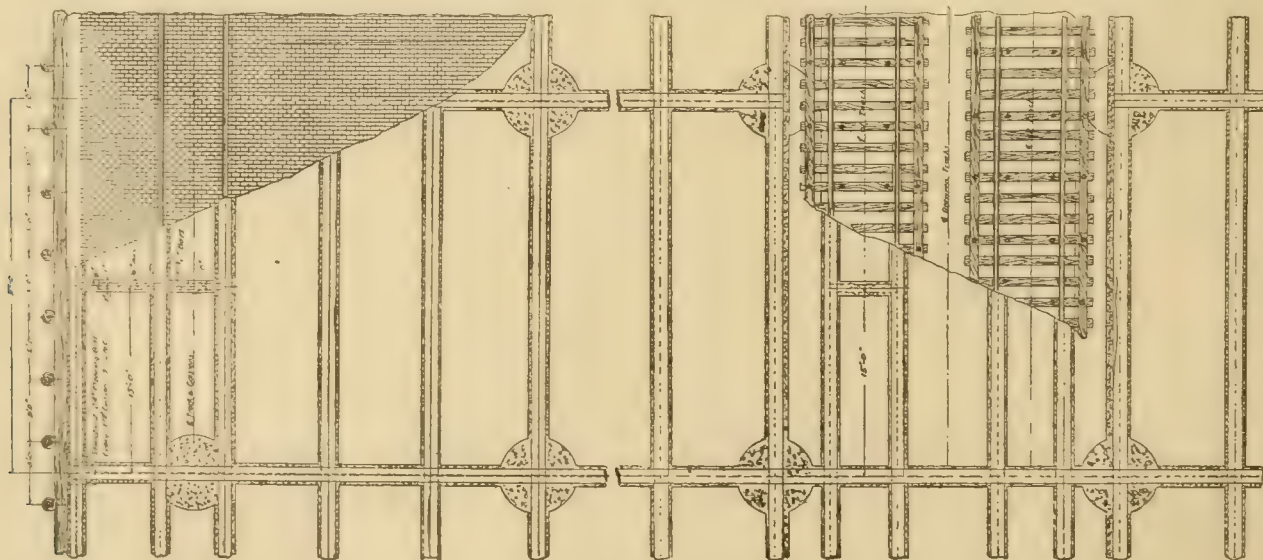


GENERAL PLAN OF CRISTOBAL TERMINAL.

in view of the uncertainty existing as to the amount of freight to be handled at the Atlantic terminal after the completion of the Canal work, no cargo handling cranes, or special unloading appliances be installed, with the exception of unloading masts, designed for

decided on will give a total frontage of 3,890 feet, in addition to 398 feet frontage at the head of the slip for a small boat landing, or sufficient to provide berthage to five vessels of the size of the Panama railroad steamer *Ancon* at one time. Out of this total frontage,

plans for which have been completed, will be 918 feet long, and will have a width of 80 feet, including the space occupied by two depressed tracks on the inshore side. The width of the warehouse proper is 53½ feet, and that of the depressed track section 26½



SECTION OF FLOOR PLAN, PIER 17.

holding blocks and falls, and that all transfer of freight inside of the dock structures be done with hand or electric trucks, depending on the distance to be traversed, and other conditions. In unloading cargo, it was determined that

there will be under cover about 218,760 square feet of dock space.

The work on the docks during the past year has been largely confined to sinking the steel caissons for the foundations, and the

feet. The depressed tracks are spaced on 13-foot centers, four feet below the level of the dock floor, so that the latter will be exactly on a level with the car floors. On the face line of the dock, a space of 22 feet has

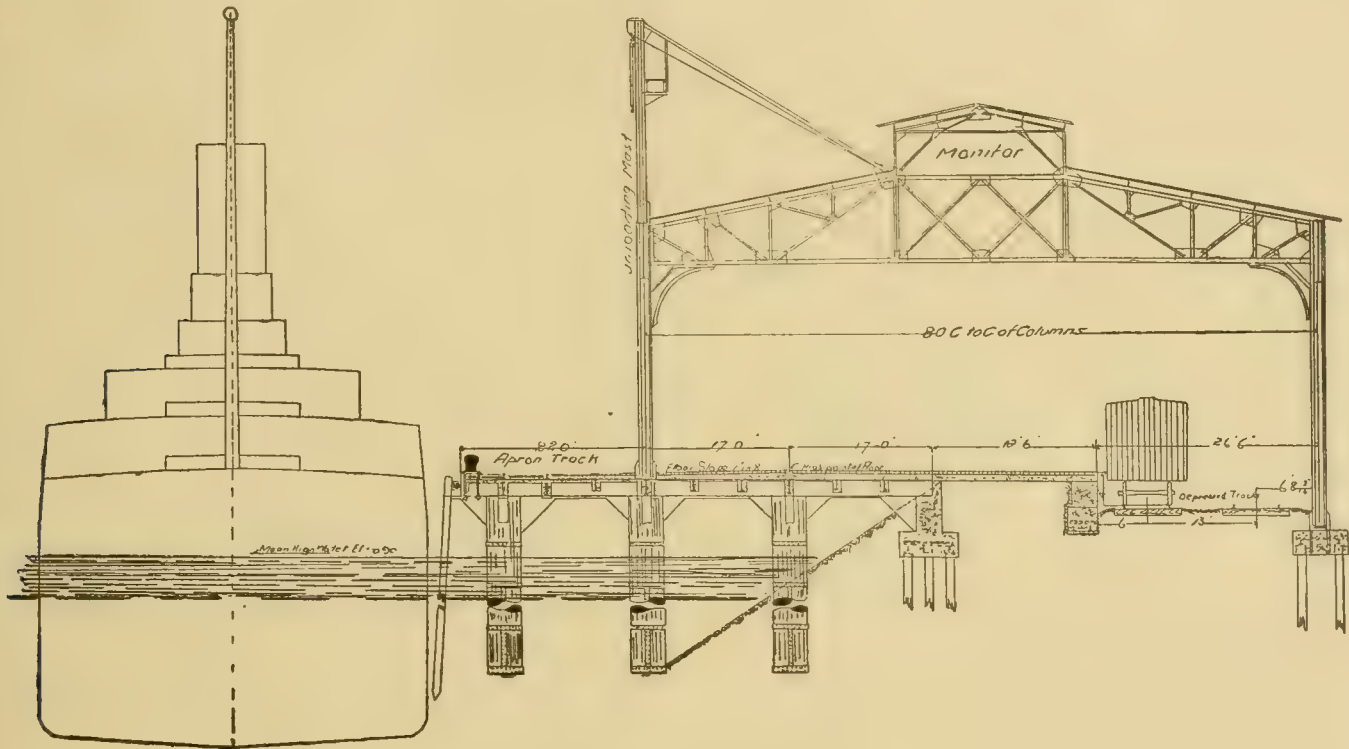
been reserved for an apron track, which will be used in unloading machinery, and other heavy material from ships into cars. The minimum clearance of the interior of the shed from the floor to the lower chord of the transverse truss will be 25 feet. The front wall will be of reinforced concrete, five inches thick and 30 feet high, with a low parapet extending throughout its length. The rear wall will be 34 feet in height, and, with the exception of the part that opens on the loading tracks, will be of similar con-

ported by four piles, and the face line columns will rest on the intersection of the steel I-beams directly over the 4-foot caissons, which, sunk to bed rock and filled with solid concrete, reinforced with steel rails, four lengths to each caisson, form the dock foundations. At the intersection of the caissons with the floor beams, haunches are provided, four to each caisson, which are designed to take the horizontal thrust of whatever shock or jar may be caused by a ship striking the dock with force.

The doors to the building are to be of the steel Kinnear roller type, 18 feet high and 20 feet wide, and will be placed 34 feet apart the entire length of the face line of the building.

On all face line columns, unloading masts will be erected to a height of 65 feet above mean sealevel. These will support longitudinal girders for carrying blocks and falls to be used in unloading cargoes from ships.

In all, 1,501,156 pounds of structural steel will be used in the dock superstructure, which,



TYPICAL SECTION OF DOCK 16, SHOWING SHED.

struction, although windows may be provided at regular intervals for better ventilation. The end walls will also be of concrete, and openings will be left for cars, teams and pedestrians. The structure will be entirely fireproof.

The roof is to be constructed of concrete slabs, two and one-half inches thick, reinforced with expanded metal. The slope will be one in five, and the middle 20 feet will be occupied by a monitor, or ventilator, provided with a skylight at the top, and louvers on the sides. Rainwater will be carried off from the face line side of the dock structure by means of 5-inch downspouts placed 34 feet apart inside of the building. On the rear side, the water will be allowed to pass directly off the roof.

Steel columns will support the main transverse trusses as well as the longitudinal side trusses, which extend the entire length of the building. Midway between the main transverse trusses will be similar intermediate trusses, supported at the ends by the longitudinal side trusses. Two rows of light bracing trusses, situated beneath the two sides of the monitor, will also extend the entire length of the shed. Diagonal tie rods will be used in the plane of the lower chords of the transverse trusses in every bay. The inshore columns will rest on a concrete footing, sup-

The floor of the dock will be composed of Purington vitrified brick, four inches thick, laid on edge, supported by a $\frac{3}{4}$ -inch sand cushion, which, in turn, is upheld by an 8-inch concrete slab resting on the steel I-beams. The floor will have a total sustaining capacity, including live and dead loads, of 1,000 pounds to the square foot, and as there will be about 89,000 square feet of floor space

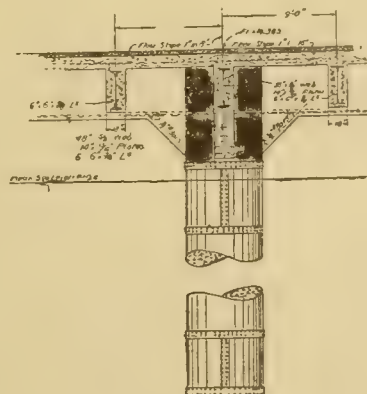
however, does not include the amount necessary for the framing for the ends, the unloaders, or the weight of the doors.

DOCK NO. 15.

Dock No. 15, which will be 426 feet in length, will be provided with a shed, similar in general construction to that on dock No. 16, but much shorter.

PIER NO. 17.

This pier will be 1,042 feet long, and 209 feet in width. It will be provided with a shed 870 long, rectangular in design, with an exposed section at each end. The floor load will be the same as for dock No. 16, but will be sustained by plate girders, instead of I-beams, resting on 6-foot caissons spaced 27 feet transversely and 30 feet longitudinally with pier, instead of 4-foot caissons, spaced 17 feet each way. There will be an apron track on each side of the pier structure, and two tracks, depressed four feet, will extend through the center of the shed.



TYPICAL SECTION OF CYLINDER, PIER 17

in the dock structure, it will support a total weight, equivalent to about 44,500 tons.

Missing Men.

Any one having information regarding the whereabouts of John R. Ulrich, at one time in the employ of the Isthmian Canal Commission on the Isthmus, and Abraham Glaser, who is supposed to be on the Isthmus, is requested to communicate with the American Legation, Panama.

SCHOOL ENROLLMENT.

Number of Pupils in White Schools About the Same as Last Year.

The total enrollment of the white schools of the Canal Zone for the first week ending Friday, October 4, was 1,000, or four less than for the opening week of last year. This number, however, does not take into account the school at Toro Point, which opened on Monday, October 14, with an attendance of about 12. In addition, a new schoolhouse is under construction at Corozal, and a number of children of school age, living in that settlement, have postponed entrance until the building is ready for occupancy. The total enrollment at the close of the month will, in all probability, exceed the enrollment for the same time last year.

A list of the white schools, with the exception of that at Toro Point, with the enrollment of the first week at each place is, as follows:

Ancon.....	204
Pedro Miguel.....	69
Paraíso.....	22
Culebra.....	45
Empire.....	166
Las Cascadas.....	43
Bas Obispo.....	22
Gorgona.....	124
Gatun.....	118
Cristobal.....	172
Porto Bello.....	15

Total..... 1,000

The number enrolled in the high schools is 78. The attendance at the Ancon school is the greatest in its history, due to the removal of a large number of the quarters from Old Balboa to Ancon, and a new influx of population on account of the increased work at the Pacific end of the Canal.

A table showing the enrollment in the white schools of the Canal Zone, with the exception of Toro Point and Porto Bello, by states, countries, and dependencies, follows:

State or country.	Number.
Alabama.....	11
Arkansas.....	3
British Guiana.....	3
British West Indies.....	15
California.....	13
Canada.....	2
Colombia.....	4
Colorado.....	5
Connecticut.....	6
Costa Rica.....	5
Cuba.....	5
Delaware.....	5
District of Columbia.....	17
Ecuador.....	4
England.....	6
Florida.....	11
France.....	8
Georgia.....	11
Germany.....	1
Greece.....	7
Guatemala.....	4
Hawaii.....	1
Idaho.....	1
Illinois.....	30
Indiana.....	14
Iowa.....	19
Kansas.....	4
Kentucky.....	22
Louisiana.....	24
Maine.....	7
Maryland.....	22
Massachusetts.....	26
Michigan.....	25
Minnesota.....	8
Mississippi.....	17

State and Country.	Number.
Missouri.....	15
Nebraska.....	13
Nevada.....	5
New Hampshire.....	1
New Jersey.....	39
New Mexico.....	1
New York.....	158
Nicaragua.....	2
North Dakota.....	1
North Carolina.....	2
Ohio.....	59
Oklahoma.....	4
Panama.....	33
Pennsylvania.....	106
Porto Rico.....	2
Rhode Island.....	2
Scotland.....	2
Spain.....	67
Tennessee.....	13
Texas.....	40
Uruguay.....	1
Utah.....	3
Venezuela.....	2
Vermont.....	6
Virginia.....	19
Washington.....	7
West Virginia.....	3
Wisconsin.....	4
Yucatan.....	4
Unclassified.....	19
Total.....	985

A total of 64 states, countries, and dependencies is represented in the above list, and all of the states of the Union, with the exception of Arizona, Montana, Oregon, South Carolina, South Dakota, and Wyoming.

Work of Central Division Unloaders in September.

The following statement shows the number of trains and Lidgerwood cars unloaded by the Central Division during the month of September:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa.....	4	1,159	23,180
Miraflores.....	3	498	9,960
Gamboa.....	2	604	12,660
Total.....	9	2,261	45,800

Pacific Division Sand Service.

A report of sand cars loaded and shipped from Balboa during the month of September, follows:

DESTINATION.	Number cars.	Cubic yards.
Pacific Division.....	1,833	33,475
Atlantic Division.....	5	117
Central Division.....	35	525
Mechanical Division.....	1	15
Quartermaster's Department.....	4	100
Civil Administration.....	1	25
Fortifications.....	*154	3,463
First Division.....	33	495
Panama Railroad Company.....	18	298
Panama Government.....	1	25
Total.....	*2,084	38,538

*Includes one barge.

Embezzlement.

The trial of Frank K. Pilson, charged with the embezzlement of Government funds while employed as assistant postmaster at Cristobal, was held before Justice Thomas E. Brown, Jr., in the Circuit Court at Cristobal, beginning on Thursday, October 10, and terminating on Saturday, October 12. He was

found guilty of having appropriated to his own use two sums of \$20 and \$40, respectively, representing the value of two international money orders issued to P. Evans of Cristobal on April 10, 1911, and was sentenced to 18 months in the Canal Zone penitentiary. In one other embezzlement and four forgery charges that had been filed against him, entries of *nolle prosequi* were made after his conviction on the first charge.

Rainfall from October 1 to 12, 1912, Inclusive.

STATIONS.	In Maximum one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	3.40	12	6.47
Balboa.....	3.83	12	6.10
*Miraflores.....	1.52	3	4.37
Pedro Miguel.....	1.00	2	2.74
Rio Grande.....	.83	10	2.18
<i>Central Section—</i>			
Culebra.....	1.08	10	2.69
*Camacho.....	1.42	7	3.51
Empire.....	1.18	7	2.84
Gamboa.....	2.01	10	5.48
*Juan Mina.....	1.47	7	3.40
Alhajuela.....	.60	6	2.83
*El Vigia.....	.68	11	3.53
*Gorgona.....	2.05	7	6.78
*Frijoles.....	3.36	7	10.39
*Monte Lirio.....	1.40	7	5.52
<i>Atlantic Section—</i>			
Gatun.....	2.04	7	4.50
*Brazos Brook.....	2.15	7	6.20
Colon.....	1.23	7	5.48
Porto Bello.....	1.99	8	16.73

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., October 11.

September Rainfall for Three Years.

STATIONS.	1910	1911	1912	Station Av.	Years of record	Rainy days 1912
<i>Pacific Section—</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>			
Ancon.....	4.84	6.03	8.38	7.46	16	20
Balboa.....	5.18	8.66	10.01	6.79	14	20
Miraflores.....	9.56	8.30	14.45	11.04	4	23
Pedro Miguel.....	7.68	8.31	10.76	8.91	5	20
Rio Grande.....	10.20	6.63	15.10	11.18	8	23
<i>Central Section—</i>						
Culebra.....	10.09	5.97	14.12	11.23	22	20
Camacho.....	11.73	6.97	14.14	11.11	7	23
Empire.....	8.99	5.46	13.78	8.31	9	19
Gamboa.....	12.24	5.20	12.75	10.50	30	24
Juan Mina.....	18.44	14.27	11.42	12.7	2	27
Alhajuela.....	18.44	9.29	9.12	11.60	14	25
El Vigia.....	17.86	7.64	10.10	12.78	5	24
Gorgona.....	13.31	6.41	12.80	12.46	10	24
Frijoles.....	16.19	7.03	11.36	12.20	5	25
Trinidad.....	22.22	11.19	9.39	12.11	5	25
<i>Atlantic Section—</i>						
Gatun.....	12.72	4.33	7.84	9.70	8	21
Brazos Brook.....	12.21	10.32	9.11	11.57	7	25
Colon.....	12.05	11.62	12.23	12.53	42	22
Porto Bello.....	13.15	17.55	15.01	13.66	5	24

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday, and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to August 31, 1912, follows:

PERIODS.	Department of Civil Administration.	Department of Law.	Department of Sanitation.	Department of Construction and Engineering.	General Items.	Fortifications.	Total.
Total to June 30, 1909.....	3,427,690.29		9,673,539.28	69,622,561.42	78,022,606.10		160,745,797.09
Total—Fiscal Year, 1910.....	709,351.37		1,803,040.95	26,300,167.05	2,863,088.83		31,675,648.20
Total—Fiscal Year, 1911.....	755,079.44		1,717,792.62	27,477,776.19	3,097,959.72		33,048,607.97
Total—Fiscal Year, 1912.....	820,398.57	24,729.16	1,620,391.12	28,897,738.10	2,819,926.53	1,212,881.66	35,396,065.14
July, 1912.....	63,913.12	1,448.53	123,803.64	2,649,246.61	200,970.55	104,126.92	3,143,509.37
August, 1912.....	62,182.51	1,468.26	123,154.48	2,539,680.83	*98,454.61	111,402.55	2,739,834.02
Grand total.....	5,838,015.30	27,645.95	15,061,722.09	157,487,170.20	86,906,497.12	1,428,411.13	266,749,461.79

*Denotes credit.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The moving picture schedule for the week ending October 26 is, as follows: Monday, Cristobal; Tuesday, Empire; Wednesday, Culebra; Thursday, Gorgona; Friday, Cristobal; Saturday, Gatun.

The standing of the teams in the bowling league on October 14 was, as follows:

	Won.	Lost.	P.C.
Empire.....	4	2	666
Gatun.....	4	2	666
Culebra.....	3	3	500
Cristobal.....	3	3	500
Corozal.....	2	4	333
Gorgona.....	2	4	333

The standing of the basketball league is, as follows:

	Won.	Lost.	P.C.
Corozal.....	1	0	1000
Empire.....	1	0	1000
Gorgona.....	1	1	500
Cristobal.....	0	1	000
Gatun.....	0	1	000

CULEBRA.

The work of installing the bowling alleys and pool tables in the new building was begun October 14. The library and reading room is now open on the second floor of the Administration annex. The moving picture exhibitions are held in the remodeled second story of the schoolhouse. This building is more central in location than the old hall.

EMPIRE.

The fencing class was resumed on Monday, October 14, under the direction of Mr. Russell. Any one wishing to join can do so.

Sixty new library books have been received from the United States, and are ready for the use of the library members.

Twenty men have entered the October handicap pool tournament.

The basketball game played Friday night between the "All-Stars" and the Empire team resulted in a victory for the latter by the score of 34 to 19.

On Saturday, October 19, the members of the boys' department will take an outing.

GORGONA.

The afternoon moving picture show will be given every week on the day when the regular evening show is given. This show is especially for the night men, but every one is invited to attend.

A large number of men are attending the gymnasium classes, but there is room for more.

A social was given on Friday evening for the people of Gorgona. The program was, as follows: Orchestral selections; baritone solo, Mr. Bennyhoff; illustrated lecture on Panamanian life; popular songs, and Barbadian talk by Messrs. Cogan, Robitoy, and Otis; piano solo, Miss Goldie Cranfield; illuminated Indian club swinging, by Mr. Kramer; boys' dumb bell, and free hand drill, by Messrs. Morrison, Brown, and Little; tenor solo, by Mr. Onken. The entertainment closed with popular songs. Refreshments were served.

Corozal won from Gorgona in basketball on Saturday evening, October 12, by the score of 15 to 19.

The Culebra bowling team took three straight games from Gorgona on Saturday evening, October 12. Scores: Gorgona—728, 740, 750. Culebra—787, 768, 830.

GATUN.

The present standing of the "Lock City" billiard tournament is, as follows:

	Won.	Lost.		Won.	Lost.
DePoorter.....	11	1	Gamble.....	7	6
Wurster.....	10	2	Bellinger.....	6	7
Neeley.....	9	4	Meise.....	5	8
Drury.....	7	4	Long.....	5	8
Founslay.....	8	5	Meyers.....	2	11
Cheeks.....	8	5	Heine.....	1	12
Jackson.....	7	6	Eggleston.....	3	10

In a game of 3-cushioned billiards, played on Friday evening, Louis DePoorter made a run of six, and another of five. He will receive a handsome cue for the highest run of the tournament.

The "Lock City" pool tournament will start on Thursday, October 18. Entries are being taken by Mr. DePoorter.

At the bowling match on Saturday, October 12, Gatun won the first and third games, and Empire the second. Scores:

	Gatun.		Empire.
Swallow.....	178 186 178	Gustavson.....	148 201 172
O'Meara.....	192 171 161	Potter.....	156 174 194
Rabbitt.....	155 153 152	Edwards.....	158 161 147
Hodges.....	133 195 197	Pearson.....	144 152 161
Oettle.....	168 172 198	Huson.....	170 195 170

Total..... 826 877 886 776 883 844

Alleys Nos. 3 and 4 will be open for duckpins on Tuesday and Thursday each week. The 200 scores for the week ending October 12 are as, follows: F. G. Smith,

200; O'Meara, 256, 203, 202, 200; Swallow, 210, 200, 200; Humphries, 212; Morrissey, 207; Rabbitt, 207, Hodges, 204. The local tenpin tournament was resumed on Monday, October 14, when New York played Pennsylvania. The commissary mandolin and guitar club will furnish music on several nights of the tournament.

The working boys defeated the schoolboys in a game of basketball on Saturday evening, October 12, by the score of 10 to 0.

The present membership of the Gatun Y. M. C. A. is 422.

Applications for tickets for the San Blas trip may be left with the secretary.

Rogers still leads in the athletic contest, conducted among the members of the senior gymnasium class.

CRISTOBAL.

The local bowlers took two out of three games from the Corozal team on Saturday night. Scores:

	Corozal.		Cristobal.
Dalton.....	148 157 162	Barret.....	191 137....
Souders.....	161 116 149	Rosteck.....	183 159 163
Peterson.....	143 209 134	Collins.....	170 172 155
Sims.....	148 128....	Bullard.....	180 126 170
Coonly.....	189 211 172	Louch.....	148 146 183
Bordt.....	146.....	Burns, T.....	156.....

Total..... 789 821 763 872 740 827

During the week ending October 12, the following high scores were made by local bowlers: Tenpins—Buser, 213; Bullard, 213; Barret, 202, 203; T. Burns, 200, 209; Louch, 203. Duckpins—Barrett, 101, 106, 116, 104, 102, 104; Marques, 104, 113, 103, 100, 110; W. Burn, 107; Farrell, 103; Farr, 104; Smith, 104; Weston, 102; Carpenter, 104; Hess, 101, 100; Herrington, 100.

On Thursday, October 10, the following program was given at the "smoker" held in honor of Mr. E. J. Schulte, the new assistant secretary: Selections by the 10th Regiment orchestra; introduction of Mr. Edward J. Schulte; selections by 10th Regiment orchestra; army calisthenics by a squad from the 10th Regiment; characteristic song and dance by Mr. R. J. Stapleton; xylophone solo, by Mr. White of the 10th Regiment; Two solos, "My Hero" and "Rose in the Bud," by Mr. W. G. Ross; Scotch specialties, by Mr. Cullen; parallel bar exercises, Messrs. Hughs and Schulte; solo, "In the Garden of My Dreams" by Mr. Mosher; solos, "Dixie" and "When I Get You Alone Tonight," by Mr. Cullen; wrestling, (1) Messrs. Heine and Huber, Græco-Roman; (2), Messrs Hughs and Schulte, catch-as-catch-can; (3), Second bout, Messrs. Heine and Huber; Barbadian dialect, sketch and song, by Messrs Robitoy, Cogan and Otis; selections by the 10th Regiment orchestra.

Saturday night, October 19, the Corozal basketball team will play the Cristobal team at Cristobal.

PORTO BELLO.

Moving picture exhibitions will, until further notice, continue to be held on Fridays.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, October 12, 1912. All heights are in feet above mean sea level.

DAY AND DATE.	STATION.			
	Vigia.	Alhajuela	Gambo.	Gatun Lake
Sun., Oct. 6.....	127.6	93.2	48.4	48.1
Mon., Oct. 7.....	127.7	93.8	48.8	48.0
Tues., Oct. 8.....	127.3	93.7	48.8	48.1
Wed., Oct. 9.....	126.8	93.2	48.4	48.1
Thurs., Oct. 10.....	127.0	93.3	48.8	48.1
Fri., Oct. 11.....	129.6	95.2	49.2	47.9
Sat., Oct. 12.....	129.0	95.0	49.3	48.0
Height of low water to the nearest foot.....	125.0	91.0	44.0	

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending October 23, 1912 (75th meridian time):

DATE.	High		Low	
	A.M.	A.M.	P.M.	P.M.
October 17.....	2.00	7.57	2.28	8.36
October 18.....	2.59	8.52	3.28	9.43
October 19.....	4.10	10.10	4.40	11.04
October 20.....	5.26	11.36	5.48	
October 21.....	12.16	6.30	12.45	6.46
October 22.....	1.07	7.20	1.33	7.32
October 23.....	1.47	7.59	2.10	8.12

OFFICIAL CIRCULARS.

Monday, November 4, a Holiday.

CULEBRA, C. Z., October 14, 1912.

CIRCULAR No. 461:

As the anniversary of the independence of the Republic of Panama falls on Sunday this year, Monday, the 4th of November, is, by authority of Act 11 of the Laws of the Canal Zone, hereby declared a public holiday, and, as far as practicable, all public business will be suspended on that day.

GEO. W. GOETHALS, Chairman.

Time Used by Engineers and Conductors for Examination for Qualified Grade.

CULEBRA, C. Z., October 12, 1912.

CIRCULAR No. 348-C.

Hereafter, the time used by engineers and conductors in preparing themselves for examination for promotion to the qualified grade will be without pay, except that such men as successfully pass the required examination will be paid for not to exceed three days' time spent in learning the road and taking the examination.

GEO. W. GOETHALS, Chairman, Isthmian Canal Commission, President, Panama Railroad Company.

Commissary Books for Cash.

CULEBRA, C. Z., October 8, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

Owing to the fact that arrangements have been made to sell commissary coupon books for cash at all commissaries, except at Gorgona, there is no longer any necessity of cash sales by I. C. C. issuing clerks. Therefore, any authority heretofore issued (not including cash sales at Gorgona shops) for the sale of commissary coupon books for cash by I. C. C. issuing clerks is hereby withdrawn.

GEO. W. GOETHALS, Chairman.

Steamship Reservations.

CULEBRA, C. Z., October 9, 1912.

TO ALL CONCERNED:

There seems to be an erroneous impression among employees that when transportation is requested on the United Fruit Company line, stateroom reservation is arranged by this office.

In order to avoid any misunderstanding on this point, employees are informed that they must arrange their own reservations on the United Fruit Company line, either by letter or telephone, direct with the agent in Colon. If desired, reservations may be arranged by employees in advance of the issuance by this office of the official request. Employees are urged, however, to notify the office of the United Fruit Company immediately of any change in sailing date or cancellation of a reservation.

GEO. W. GOETHALS, Chairman.

Information Concerning Crippled Employees.

CULEBRA, C. Z., October 9, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

It is found that the information recently furnished concerning crippled in your respective departments and divisions is not sufficient.

Please furnish complete information on printed forms, a supply of which is being sent you, and a copy of which is submitted below. These forms may be filled out by the men themselves, if desired, but should be carefully checked and typewritten before being sent to this office. Please send one original and two copies for each man reported on. The department and division should be stamped in with a rubber stamp, as many of these men do not know the names of their departments and divisions.

GEO. W. GOETHALS, Chairman.

[FORM]

Department or division.....
Name.....
Check No.
Gang.....
Occupation.....
Rate of pay.....
Gold or silver.....
Citizen or subject of.....
Degree of disability.....
Married or single.....
Is family on the Isthmus.....
Names and ages of those dependent on you for support.....
When there is no other work available for you, will you accept employment on the hospital farm?.....

OFFICIAL DIRECTORY OF PANAMA.

President—Dr. Belisario Porras.
First vice-president—Rodolfo Chiari.
Second vice-president—Ramón M. Valdés.
Third vice-president—Aristides Arjona.

Departments of National Government.

Secretary of Government and Justice—Francisco Filós.
Assistant Secretary—Enrique L. Hurtado.
Secretary of Foreign Affairs—Ernesto T. Lefevre.
Assistant Secretary—José B. Calvo.
Secretary of Finance—Eusebio A. Morales.
Assistant Secretary—Julio Arjona Q.
Secretary of Public Works—Ramón F. Acevedo.
Assistant Secretary—Tomás Herrera A.
Secretary of Public Instruction—Guillermo Andreve.
Assistant Secretary—Horacio Rangel (ad-interim.)
Director General of Posts and Telegraphs—L. F. Ramírez (ad-interim.)
Director General of Statistics—Adolfo Alemán.
Administrator General of Public Lands—Unfilled.
Treasurer General—Unfilled.
Chief Engineer—Ricardo M. Arango.

Minister at Washington—Dr. Ramón M. Valdés.
Secretary of Legation—José E. Lefevre.

Judiciary.

Chief Justice of the Supreme Court—Francisco Vde la Espriella.
Judges of the Supreme Court—Nicolas Victoria J., Aurelio Guardia, Facundo Mutis Durán, Juan Lombardi.
Attorney General—Dr. Aristides Arjona.

Governors of Provinces.

Panama—Francisco A. Mata.
Colon—Rubén S. Arcia.
Bocas del Toro—Pacífico Meléndez P.
Coclé—Alfredo Patiño.
Los Santos—José M. Moreno.
Veraguas—A. Gilberto Vega.
Chiriquí—Gerardo Herrera.

Municipalities of Panama and Colon.

Panama—Mayor (Alcalde)—M. D. Cardoze.
Chief of Police—Leonidas Pretelt.
Captain of the Port—Carlos de Diego.
Colon—Mayor (Alcalde)—Luis Muñoz.
Chief of Police—Alberto Harris.
Captain of the Port—Inocencio Galindo, Jr.

List of the Diplomatic and Consular Corps Accredited to the Government of the Republic of Panama.

AUSTRIA-HUNGARY.

Colon—F. Ullrich, Consul.

BELGIUM.

Panama—B. D. Fidanque, Consul. C. H. R. Raven, Vice-Consul.

CHILE.

Panama—Antonio B. Agacio, Secretary of the Legation and Consul General. Juan Ehrman, Vice-Consul.
Colon—Ernesto Jaramillo Aviles, Vice-Consul.

CHINA.

Panama—Owyang King, Consul-General.

COSTA RICA.

Panama—J. M. Vaglio, Consul.

Colon—Daniel Rojas, Consul.

CUBA.

Panama—R. Gutierrez Alcaide, Charge d'Affaires and Consul-General. Mario Fernandez de Lara y Sotolongo, Secretary of the Legation.
Colon—Luis F. Estenoz, Consul.

DENMARK.

Panama—Samuel L. Maduro, Consul.

Colon—Joseph Fidanque, Vice-Consul.

ECUADOR.

Panama—J. Cueva García, Minister Resident.
Victoriano Endara, Consul.

FRANCE.

Panama—H. M. Barre-Ponsignon, Charge d'Affaires.
Louis Thubtier, Vice-Consul.

Colon—M. H. de Jussien de Senevier, Vice-Consul.

GERMANY.

Panama—Arturo Kohpcke, Consul.

Colon—Alfred Sange, Consul.

GREAT BRITAIN.

Panama—C. C. Mallet, Minister Resident and Consul-General. Douglas F. S. Filliter, Vice-Consul. E. S. Humber, Pro-Consul.

Colon—William McAdam, Pro-Consul. James R. Murray, Vice-Consul.

GREECE.

Panama—Florencio Arosemena, Consul.

GUATEMALA.

Panama—José F. Arango, Consul-General.
Colon—Vicente Delgado, Consul.

HAITI.

Colon—Jules Faine, Consul-General.

HOLLAND.

Panama—D. M. Sasso, Vice-Consul.
Colon—J. J. Ecker, Sr., Vice-Consul.

HONDURAS.

Panama—M. E. Velasquez, Consul-General.

ITALY.

Panama—Arturo Kohpcke, Consul.
Colon—L. Delpiano, Consular Agent.

MEXICO.

Panama—Luis G. Chaparro, Consul-General.
Baldomero Mendez, Vice-Consul.
Colon—Inocencio Galindo, Vice-Consul.

NICARAGUA.

Panama—Marcos E. Velasquez, Charge d'Affaires.
Julio Arjona, Consul. E. T. Lefevre, Vice-Consul.

NORWAY.

Panama—Alexander Morrice, Vice-Consul.
Colon—R. Delevante, Acting Consul.

PERU.

Panama—Alberto de Souza Ferreyra, Consul-General.
Colon—H. R. Wilford, Consul.

PORTUGAL.

Panama—Ramón Arias F., Consul.

SALVADOR.

Panama—Ernesto A. Boyd, Charge d'Affaires. Federico Boyd, Consul-General. Federico O. Boyd, Acting Vice-Consul.

SANTO DOMINGO.

Panama—Mauricio Fidanque, Consul.
Colon—José M. Fidanque, Vice-Consul.

SPAIN.

Panama—José Buigas de Delmau, Charge d'Affaires and Consul.

SWEDEN.

Panama—R. B. de St. de Malo, Consul.
Colon—J. J. Ecker, Sr., Vice-Consul.

UNITED STATES.

Panama—H. Percival Dodge, Envoy Extraordinary and Minister Plenipotentiary. W. W. Andrews, Secretary of the Legation. Alban G. Snyder, Consul-General. Caspar L. Dreier, Vice-Consul.

Colon—James C. Kellogg, Consul. Robert Wilcox, Acting Vice-Consul.

VENEZUELA.

Colon—Angel Diaz Castro, Consul-General.

COMMISSARY DEPARTMENT.

Cold Storage Prices.

The following changes have been made in the prices of cold storage supplies as published in *The Canal Record* of October 2, 1912:

Sweetbreads, beef, advanced to 30 cents a pound.
Eggs, fresh, advanced to 37 cents per dozen, or 19 cents by the half dozen.

Oysters, added to stock, price 40 cents a keg.
Peppers, green, advanced to 5 cents a pound.
Romaine, added to stock, price 10 cents a pound.

Family Quarters.

Applications for married quarters on file on September 30, 1912, were, as follows:

DISTRICT.	List No. 1.	List No. 2.
Ancon.....	8 (3)	83 (25)
Ancon Hospital.....		1
Balboa.....	1 (1)	51 (9)
Bas Obispo.....		21 (4)
Colon Hospital.....	1	
Corozal.....		62 (19)
Cristobal.....		124 (13)
Culebra.....		42 (2)
Empire.....		83
Gatun.....		93 (8)
Gorgona.....		60 (26)
Las Cascadas.....	5	30 (4)
Pedro Miguel.....	5 (1)	55 (7)
Porto Bello.....		6 (4)
Toro Point.....		6 (1)
Total.....	20 (5)	717 (122)

NOTE—The figures in parentheses show the number of applicants already occupying regular or nonhouse-keeping family quarters at stations other than those at which applications are filed.

LOST—On P. R. R. train leaving Colon at 5.10 a. m., Tuesday, October 8, a nickel plated Elgin watch, with initials forb—J. W. L. Finder please notify J. W. Little, Gatun, P. O. Box No. 11, and receive reward.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Allianca.....	P. R. R. Tuesday.....	Oct. 15
Colon.....	P. R. R. Monday.....	Oct. 21
Advance.....	P. R. R. Saturday.....	Oct. 26
Panama.....	P. R. R. Saturday.....	Nov. 2
Allianca.....	P. R. R. Friday.....	Nov. 8
Colon.....	P. R. R. Thursday.....	Nov. 14
Advance.....	P. R. R. Wednesday.....	Nov. 20
Panama.....	P. R. R. Tuesday.....	Nov. 26
Allianca.....	P. R. R. Tuesday.....	Dec. 3
Colon.....	P. R. R. Monday.....	Dec. 9
Advance.....	P. R. R. Saturday.....	Dec. 14
Panama.....	P. R. R. Friday.....	Dec. 20

CRISTOBAL TO NEW YORK.

Panama.....	P. R. R. Monday.....	Oct. 21
Allianca.....	P. R. R. Sunday.....	Oct. 27
Colon.....	P. R. R. Saturday.....	Nov. 2
Advance.....	P. R. R. Thursday.....	Nov. 7
Panama.....	P. R. R. Thursday.....	Nov. 14
Allianca.....	P. R. R. Wednesday.....	Nov. 20
Colon.....	P. R. R. Tuesday.....	Nov. 26
Panama.....	P. R. R. Sunday.....	Dec. 8
Allianca.....	P. R. R. Sunday.....	Dec. 15
Colon.....	P. R. R. Saturday.....	Dec. 25

NEW YORK TO COLON.

Metapan.....	U. F. C. Wednesday.....	Oct. 9
Tivives.....	U. F. C. Saturday.....	Oct. 12
Clyde.....	R. M. Saturday.....	Oct. 12
Prinz Sigismund.....	H. A. Saturday.....	Oct. 12
Zacapa.....	U. F. C. Wednesday.....	Oct. 16
Prinz Joachim.....	H. A. Saturday.....	Oct. 19
Sixaola.....	U. F. C. Saturday.....	Oct. 19
Almirante.....	U. F. C. Wednesday.....	Oct. 23
Orotava.....	R. M. Saturday.....	Oct. 26
Prinz Eitel Friedrich.....	H. A. Saturday.....	Oct. 26
Carillo.....	U. F. C. Saturday.....	Oct. 26
Santa Marta.....	U. F. C. Wednesday.....	Oct. 30
Prinz August Wilhelm.....	H. A. Saturday.....	Nov. 2
Turrialba.....	U. F. C. Saturday.....	Nov. 2
Metapan.....	U. F. C. Wednesday.....	Nov. 6

COLON TO NEW YORK.

Santa Marta.....	U. F. C. Thursday.....	Oct. 17
Prinz August Wilhelm.....	H. A. Monday.....	Oct. 21
Turrialba.....	U. F. C. Tuesday.....	Oct. 22
Metapan.....	U. F. C. Thursday.....	Oct. 24
Prinz Sigismund.....	H. A. Monday.....	Oct. 28
Tivives.....	U. F. C. Tuesday.....	Oct. 29
Thames.....	R. M. Tuesday.....	Oct. 29
Zacapa.....	U. F. C. Wednesday.....	Oct. 31
Prinz Joachim.....	H. A. Monday.....	Nov. 4
Sixaola.....	U. F. C. Tuesday.....	Nov. 5
Almirante.....	U. F. C. Thursday.....	Nov. 7

NEW ORLEANS TO COLON.

Parismina.....	U. F. C. Saturday.....	Oct. 12
Abangarez.....	U. F. C. Saturday.....	Oct. 19
Cartago.....	U. F. C. Wednesday.....	Oct. 23
Atenas.....	U. F. C. Saturday.....	Oct. 26
Heredia.....	U. F. C. Wednesday.....	Oct. 30
Parismina.....	U. F. C. Saturday.....	Nov. 2
Abangarez.....	U. F. C. Saturday.....	Nov. 9
Cartago.....	U. F. C. Wednesday.....	Nov. 13

COLON TO NEW ORLEANS.

Atenas.....	U. F. C. Thursday.....	Oct. 17
Heredia.....	U. F. C. Thursday.....	Oct. 17
Parismina.....	U. F. C. Thursday.....	Oct. 24
Abangarez.....	U. F. C. Thursday.....	Oct. 31
Cartago.....	U. F. C. Thursday.....	Oct. 31
Atenas.....	U. F. C. Thursday.....	Nov. 7
Heredia.....	U. F. C. Thursday.....	Nov. 7
Parismina.....	U. F. C. Thursday.....	Nov. 14
Abangarez.....	U. F. C. Thursday.....	Nov. 21
Cartago.....	U. F. C. Thursday.....	Nov. 21

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 2 p. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston, at 10 a. m., on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* sail at 2 p. m., and call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m.

CANAL



RECORD

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No. 9.

The Canal Record

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Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission for the month of September is published in full in this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Hospital Farm for the Disabled and Insane.

The Chairman has approved the report of the committee, consisting of Maj. R. E. Noble, Capt. R. E. Wood, and Mr. C. A. McIlvaine, appointed to investigate the matter of establishing a hospital farm for the care of permanently disabled employes and of the insane. The Canal Commission and the Panama Railroad Company, are now giving employment to 24 disabled persons on the gold roll, and 212 on the silver roll. The following statements shows the number married and single, and the classes of work at which they are employed:

	Gold roll.	Silver roll.
Married.....	13	121
Single.....	11	91
Total.....	24	212

CLASS OF EMPLOYMENT.

	Gold roll.	Silver roll.
Switchmen.....	..	114
Watchmen.....	1	39
Laborers.....	..	16
Foremen.....	5	3
Carpenters.....	1	3
Miscellaneous.....	17	37
Total.....	24	212

The number of insane at Ancon asylum on October 22 was 306.

The committee, in its report, favored, as the best plan of caring for the chronically ill and crippled employes, and the insane, the establishment of a farm, where the cultivation of bananas, plantains, yams, and other native vegetables can be carried on. It is also believed that it would be a good plan

to combine with this farm, the dairy, poultry farm, and piggery, now maintained by Ancon Hospital. These activities would afford varied employment to the prospective inmates, ranging from ordinary labor for the physically fitted among the insane, to light tasks for the crippled. The committee favors Corozal as the best site for such a farm. There are several hundred acres of comparatively open land at that point, and the survey prepared by the expert from the United States Department of Agriculture, shows that the soil in that locality is good. The present Canal Commission buildings at Corozal are ample to house all the disabled and insane; moreover, the town has good railroad service, and, in addition, there is a wagon road to Panama. Furthermore, it is probable that a wagon road will be built within the next year, or two, to Ancon and Balboa.

The committee was of the opinion that the insane asylum, now at Ancon, should be transferred to the new site, as soon as Canal construction has advanced to the point when the employes' quarters can be vacated, and those of the crippled employes who desire it can be transferred at the same time. In case a reduction of force makes it necessary to care for some of the disabled before the houses at Corozal will be available, the committee suggested that two or three labor camps be moved to the site of the farm for temporary quarters, and in this way, the services of the men can be utilized in the preliminary work at the farm.

Admitting that it was difficult at this time to give more than a bare outline of the scheme of administration at the proposed farm, the committee believed, however, there should be a doctor in charge of the insane, as at present, he to determine those of the patients capable of performing labor. It was further agreed that the superintendent of the farm should be one with a knowledge of tropical agriculture, and that he should be employed from the outset, in order to plan matters properly. The committee favored the furnishing of quarters to the disabled, including a limited number of married quarters to those having families, and that they should be paid a wage scale of five, seven, and 10 cents an hour, dependent on the tasks they are called upon to perform. It was believed, also, that it would be more advantageous to have Ancon cemetery moved to a site adjoining the farm.

The Chairman, in approving the report of the committee, requests the Chief Sanitary Officer to give the matter of moving the cemetery to the site recommended by the committee, together with other details, his prompt consideration, in order that the planting of fruit trees may be taken in hand as soon as possible, and stated that as soon as a competent superintendent is procured and the farm is planned in a general way, a considerable number of employes, who are

crippled, but who are still capable of performing a certain amount of labor, can be detailed to start the work.

Changes in Fire and Police Departments.

Owing to a curtailment in the allotment of funds to the Division of Fire Protection for the fiscal year 1912-13, due to a smaller Congressional appropriation, a reduction in force of seven paid members has been necessary. Under the new arrangement, which is now in effect, the status of the personnel at the different stations will be, as follows:

Ancon—Tivoli station—One assistant fire chief, one captain, one lieutenant, and six firemen. Increase of three firemen.

Ancon—Hospital station—Closed and positions of captain and lieutenant abolished.

Balboa—The one paid fireman, formerly at this point, has been removed.

Corozal—One fireman. No reduction.

Miraflores—The one paid fireman, formerly at this point, has been removed.

Pedro Miguel—One fireman. No reduction.

Paraiso—One fireman. No reduction.

Culebra—One lieutenant and one fireman. Force reduced by one captain and two firemen.

Empire—One captain, one lieutenant, and three firemen. No reduction.

Las Cascadas—One fireman. No reduction.

Gorgona—One captain, one lieutenant, and two firemen. Force reduced by one fireman.

Gatun—One captain, one lieutenant, and three firemen. Force reduced by one fireman.

Cristobal—Office force, one chief, one clerk, one lineman, and one messenger; station force, one captain, one lieutenant, one fire engineer, one motor engineer, one electrician, and 11 firemen. Force reduced by one fireman.

Toro Point—The one paid fireman, formerly at this point, has been removed.

Porto Bello—The one paid fireman, formerly at this point, has been removed.

The total reduction in the fire department personnel is seven, consisting of one captain, and six firemen. The changes were effected by the transfer of men from one station to another, and the reductions have been accomplished through the voluntary resignations of firemen having enough accumulated leave, and by transfers to other departments.

Reductions have been made at points where conditions would best permit. Thus, the reduction in the force at Culebra was made, because of the removal of buildings there during the past year or two on account of the slides; and the reduction at Gatun was made, because of the approaching completion of the work west of the locks.

The abolishing of the one-man stations at Balboa, Miraflores, Porto Bello, and Toro Point, turns over the matter of fire protection to the volunteer companies in those settlements. The hose carts with which these stations are equipped, will be ready for use at all

CANAL WORK IN SEPTEMBER.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., October 12, 1912.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of September, 1912:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry.....	Cubic yards...	1,025	922,712	200,551	1,244,588
Work excavation, wet.....	Cubic yards...	497,122		458,059	955,181
Total work excavation.....	Cubic yards...	498,147	922,712	658,610	2,079,469
Plant excavation, dry.....	Cubic yards...		12,344	748	13,092
Plant excavation, wet.....	Cubic yards...			31,879	31,879
Total plant excavation.....	Cubic yards...		12,344	32,627	44,971
Total Canal excavation.....	Cubic yards...	498,147	935,056	691,237	2,124,440
Material placed in dams.....	Cubic yards...	246,906		31,585	278,551
Concrete placed in locks and dams.....	Cubic yards...	4,250		49,161	53,411
Explosives used.....	Tons (Gross)...	36.95	102.36	67.08	206.40
Rock drilled.....	Feet.....	33,442	312,997	98,914	450,353
Tracks removed.....	Miles.....		6.08		6.08
New tracks laid.....	Miles.....	2.56	9.92	3.16	15.64
Rock crushed.....	Cubic yards...			41,379	41,379
Cement used.....	Barrels.....	7,379	101	50,238	57,718
New roads built.....	Miles.....				
Water mains laid.....	Feet.....	4,080	2,210		6,290
Sewers laid.....	Feet.....	397			397
Open drains and ditches dug.....	Feet.....	40,195	45,995	1,767	87,953
Average daily force.....	.....	4,609	6,602	7,503	18,714
Average rainfall.....	Inches.....	10.03	13.41	10.39	12.13

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the division engineers and the erection subdivision of this office, the inspection of this work being cared for by the masonry and lock structures subdivision. This subdivision is also charged with general inspection of masonry work of all the locks.

INSPECTION OF INSTALLATION OF RISING STEM GATE VALVES, AND ERECTION OF SPILLWAY GATES AND CAISSONS.

The work of preparing rising stem gate valve chambers and installation of valves, and erection of Spillway gates, has progressed satisfactorily during the month.

No work has been done as yet on the erection of the caissons.

LOCK GATES AND PROTECTIVE DEVICES.

Up to the 20th of September, a total of 57,556 tons of steel plates and shapes was accepted at the rolling mills. In the above tonnage is included 1,414 tons on replace orders, and 207 tons for spare parts, making a total of 55,935 tons rolled on the original order for 92 leaves. A total of 45,396 tons of riveted structural steel has been shipped from the Rankin shops, or about 91 per cent of the total contract weight of this class. The tonnage of lock gate material erected in the various locks to October 1, 1912, without regard to its being fully reamed or riveted, was 26,902 tons, out of a total of 58,000 tons, or about 46 per cent. Of this, 2,115 tons, or about 3½ per cent, were erected during the month of September. The number of field rivets driven was 1,571,402, or about 26 per cent of the total, of which 195,514, or about 3½ per cent, were driven in

September. The tonnage erected was about 12½ per cent more than in the preceding month, and the number of rivets driven was about eight per cent less than in the preceding month.

LOCK GATE ERECTION.

Gatun—Work is in progress on 40 leaves, this being the entire number to be erected at this point. The average progress is about, as follows: Erection, 56 per cent complete; reaming, 40 per cent complete; riveting, 35 per cent complete; finishing work, 18 per cent complete.

Pedro Miguel—Work is in progress on the

entire 24 leaves, which are to be erected at this point. The average progress is about, as follows: Erection, 77 per cent complete; reaming, 52 per cent complete; riveting, 48 per cent complete. No leaves are finished.

Miraflores—Work is in progress on 12 out of the total of 28 leaves to be erected at this point. The average progress is, as follows: Erection, 4½ per cent complete.

LOCK GATE RECESS COVERS.

Of the total of 36 recess covers at Gatun, all of which are erected, 11 remain to be aligned and grouted. At Pedro Miguel, out of a total of 20, five remain to be aligned and grouted. At Miraflores, of the 24 recess covers, 12 have been erected, and the riveting on 10 has been practically completed.

BABBITTING OF HOLLOW QUOINS.

As stated in the report for the previous month, the babbitting of all hollow quoins at Gatun and Pedro Miguel has been completed, and the work inspected and accepted. The hollow quoins for six leaves at Miraflores have been aligned and babbitted and accepted as satisfactory.

CHAIN FENDERS.

All the material for the sample fender machines to be installed in pits Nos. 812 and 813 in the upper approach walls of the Gatun locks has been delivered, with the exception of the piping, operating valves, and mechanism for operating the limit switch. The work on the mechanism for this limit switch is well under way, but no shipments have been made to date. In regard to the hawsepipe, 13 castings were in various stages of completion at the works of the contractor, shipment having been made of 10 hawsepipes for Gatun Locks, and 12 for Pedro Miguel Lock. In the erection of this material on the Isthmus, the installation of the machine proper in pit No.

813 (Gatun) was accomplished during the month. The piping, pump, and water supply tank in connection with this machine still remain to be installed. The erection of this machine began August 26, 1912. Owing to some difficulty encountered in unwatering pit No. 812 (Gatun,) the erection of the second machine has been somewhat delayed. All the main parts of the machine are at the pit site in readiness for erection.

INSPECTION AND ERECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection of the operating machinery and electrical equipment. Up to the present time, this force has inspected material under 60 contracts. The majority of the contractors are behind in their rate of delivery, but it appears that they are augmenting this rate, and that, in general, the final delivery will be in accordance with the contracts. The machines received on the Isthmus are being installed as rapidly as possible after receipt of same. The erection force is hampered by the fact that the parts for the machines are not delivered successively, which requires spreading the installation over a large number of machines.

The following tabulations are given as a summary of the work:

RISING STEM GATE VALVES.

	Gatun—56		Pedro Miguel—24	
	Assembled.	Placed.	Assembled.	Placed.
During mo. ....	.....	4	3	.....
To date.	10	18	3	.....

FIXED IRONS AND TRACKS FOR RISING STEM GATE VALVES.

	Gatun—112		Pedro Miguel—48	
	Partially installed.	Installed.	Partially installed.	Installed.
During mo.	6	10	.....	.....
To date.	24	24	18	.....

GUARD VALVES.

	Gatun—6		Pedro Miguel—6	
	Assembled.	Placed.	Assembled.	Placed.
During mo. ....	.....	.....	.....	.....
To date.	6	6	.....	.....

RISING STEM GATE VALVE MACHINES.

	Gatun—56.		
	Received.	Partially installed.	Installed.
During month.	6	.....	.....
To date.	24	13	2

	Pedro Miguel—24		
	Received.	Partially installed.	Installed.
During month.	1	1	.....
To date.	24	14	.....

RAIL TRACK.

(In one-foot units.)

	Gatun—21,945 feet.			
	Dist.	Track laid.	Frozen.	Completed.
During month.	1,846	1,846	1,900	715
To date.	12,608	12,608	11,608	3,920

	Pedro Miguel—13,213 feet.			
	Dist.	Track laid.	Frozen.	Completed.
During month.	1,800	.....	.....	.....
To date.	7,620	6,720	5,820	5,826

CYLINDRICAL VALVE MACHINES.

Gatun—60.			
	Received.	Partially Installed.	Installed.
During month.....			1
To date.....	40	36	3

Pedro Miguel—20.			
	Received.	Partially Installed.	Installed.
During month.....			
To date.....	20	20	

AUXILIARY CULVERT VALVE MACHINES.

Gatun—4.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	4	4	

Pedro Miguel—4.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	2		

MITER GATE MOVING MACHINES.

Gatun—40.			
	Received.	Partially installed.	Installed.
During month.....	0 comp.	1	
To date.....	2 comp.	10	2

Pedro Miguel—24.			
	Received.	Partially installed.	Installed.
During month.....	0 comp.	5	
To date.....	0 comp.	5	

MITER FORCING MACHINES.

Gatun—20.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	1		1

Pedro Miguel—12.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

MITER GATE RECESS COVERS.

Gatun.			
	Placed.	Frozen.	Completed.
During month.....	3	1	
To date.....	25	13	

Pedro Miguel.			
	Placed.	Frozen.	Completed.
During month.....	2	1	2
To date.....	15	4	2

Miraflores.			
	Placed.	Frozen.	Completed.
During month.....	2		
To date.....	10		

ELECTRICAL WORK—ATLANTIC DIVISION.

Conductor rails, insulators, brackets, and cover plates were installed on 728 feet of curved track and 2,067 feet of straight track, making a total to date of 3,565 lineal feet. Of this, 1,477 lineal feet were laid with copper conductor bar, and 2,088 lineal feet with steel conductor bar.

Dies, made from designs of the First Division, were tried out at Gorgona on a small sample lot of conductor slot brackets, and a rate of five brackets per minute was estab-

lished, which should bring the cost of straightening and handling to one cent per bracket, or less, demonstrating that the process is decidedly economical compared to approximately 21 cents for planing and 13 cents per bracket for milling. Arrangements have been made to ship the balance of the brackets to the Empire shops, where they will be corrected by the use of these dies.

A miter gate anchor casting has been fitted with a wooden dummy of the miter gate moving machine strut and a length of flexible conduit, in order that data may be obtained on which to base a proper selection of cable for use at this point, in addition to gaining an idea of the life of the flexible conduit when subjected to bending.

Two hundred feet of 2-inch conduit were installed in miter gate recess covers Nos. 29, 33, 37, and 38. Temporary light and power circuits have been maintained and extended to serve for the erection of machinery and mixing concrete.

ELECTRICAL WORK—PACIFIC DIVISION.

On account of no track being available for bonding, no electrical work was done in the Pacific Division during the month.

EMERGENCY DAMS.

Inspection has been in progress in the United States at nine localities, and 916 tons of material were accepted during the month. Up to the end of the month, a total of 5,239 tons have been fabricated and accepted. About 360 tons of material have been delivered on the Isthmus during the month, and about 916 tons have been erected. Up to the end of the month, a total of 3,555 tons have been delivered and 1,181 tons have been erected. Work has been in progress on one dam.

AIDS TO NAVIGATION.

During the month, work has been in progress erecting range towers Nos. 3, 5, and 7 in the Gatun Lake section; preparing caisson foundation for range tower No. 1, Gatun Lake section; erecting beacons Nos. 7 and 8 in the Pacific Division; erecting electric light line, and making the necessary surveys and reconnaissances.

The following is the condition of the work on September 30: Ten range towers of the Atlantic and Pacific Division type, and three range towers of the Gatun Lake section type, have been completed, except for placing certain fittings and the permanent lights. One range tower of the Gatun Lake section type is up to a height of 12 feet, and its foundation completed. One foundation for Atlantic and Pacific Division type of tower is completed, and one caisson foundation for same type of tower has been sunk to within 16 feet of its final position. Two skeleton tower beacons for the Pacific Division, and their foundations, are completed, except for installing the lights.

The caisson for the west breakwater light has been completed up to a height of 25 feet.

Fifty-five reinforced concrete beacons have been cast in readiness for setting up. There were also cast and completed one hundred and seventeen 48 by 48 by 26-inch concrete sinkers for gas buoys, and one hundred and three 24 by 24 by 18-inch concrete sinkers for spar buoys.

Work was begun on the erection of an electric light line about two and one-half miles long from the Aguadulce pumping station to

range No. 1-2 and beacons Nos. 5 and 7, Pacific Division.

Atlantic Division.

GATUN LOCKS.

Excavation—During the month, excavation for the locks' backfill was carried on by two steamshovels in the borrow pit south of Gatun station.

Backfill—Backfilling behind the side and center walls of the locks was continued. The quantity placed during the month aggregated 71,302 cubic yards. The total placed to October 1, 1912, amounted to 1,846,966 cubic yards.

Receiving and issuing material—The receipts of sand exceeded the consumption by 885 cubic yards; the receipts of cement exceeded the consumption by 10,333½ barrels; the issues of rock amounted to 4,472 cubic yards, no rock being received.

Mixing and placing plants—Plant No. 1 and the portable mixers were kept in satisfactory operation during the month.

Concrete work—During the month, a total of 3,162 cubic yards of concrete was placed, distributed, as follows: Upper lock, 1,319 cubic yards; middle lock, 837 cubic yards; lower lock, 1,006 cubic yards.

A recalculation of the amount of concrete to be placed, owing to the greater depth of foundations in the approach walls, shows a total of 2,050,000 cubic yards in Gatun Locks. On this basis at the end of the month, the concrete work was 92.87 per cent completed. Of the amount placed during the month, 1,236 cubic yards were reinforced. The bucket measurement exceeded the place measurement by 372 cubic yards.

OPERATION OF THE PERMANENT CONCRETE CONSTRUCTION PLANTS.

Length of working day (hours).....	9.00
Average number of hours per day worked per strand of cableway laying concrete (actual working time).....	4.29
Average number of mixers per day.....	2.00
Average hourly output per mixer (actual working time) cubic yards.....	60.38
Average amount of concrete laid per hour, per strand of cableway (actual working time) cubic yards.....	22.55
Concrete laid (cubic yards) cableways.....	2,278
Concrete laid (cubic yards) derricks.....	1,236
Concrete laid (cubic yards) portable mixers.....	20

Total amount of concrete laid (cubic yards) 3,534

GATUN DAM.

Construction during the month increased the total fill, as determined by cross section of the material in place, by 246,966 cubic yards, making the total amount in place 20,482,351 cubic yards. An arbitrary reduction of 65,000 cubic yards has been made for slow consolidation in those sections of the Dam not covered by monthly cross section. Of this, 57,500 cubic yards has been charged against dry fill and 7,500 cubic yards against wet fill. On October 1, the Dam was 93.5 per cent completed.

Hydraulic fill—Dredging operations increased the hydraulic fill by 62,666 cubic yards, making the total hydraulic fill in place 10,124,082 cubic yards.

Dry fill—The material received from steamshovels, amounting to 184,300 cubic yards, was placed on the north and south toes of the Dam, east and west of the Spillway, making the total dry fill in place 10,358,269 cubic yards.

GATUN SPILLWAY.

Hydroelectric plant—During the month, 850 cubic yards of rock were removed by hand and crane in preparing foundations, increasing the

total excavation for this purpose to 93,699 cubic yards.

Concrete—The work of placing concrete was continued, the amount placed during the month aggregating 1,088 cubic yards. The concrete work for the Spillway was 91.54 per cent completed.

Backfill—There was no backfilling done during the month, the total remaining 16,495 cubic yards.

Excavation—During the month, 175 cubic yards of rock were removed by hand in preparing foundations in the Spillway, making the total excavation 1,591,261 cubic yards.

HARBOR AND CHANNEL SECTION.

Dredging from the Ocean to Mindi—Five dredges removed 324,466 cubic yards of earth and 47,836 cubic yards of rock from the Canal prism. In addition, the dredge *Mindi* removed 39,183 cubic yards of coral from between docks Nos. 16 and 17, Panama Railroad Company's Cristobal terminal docks.

On September 30, forty feet of water could be carried from zero to zero plus 2,100 feet; 35 feet to mile post four, plus, 3,500 feet; 30 feet to mile post five, plus 2,200 feet; and 20 feet to mile post six, plus 1,900 feet. The drill boat *Terrier* drilled 3,239 feet, using 23,350 pounds of dynamite, and shot 7,240 cubic yards of earth and 18,698 cubic yards of rock to minus 45 feet mean sealevel.

Dredging approach to Gatun Locks—Two dredges removed 109,798 cubic yards of earth and 15,022 cubic yards of rock from the Canal prism.

Porto Bello—During the month, 8,711 cubic yards of rock were shipped to Toro Point for use in the construction of the breakwater.

Rock transportation service—In connection with this service, plant steamed 1,880 miles, handled 96 barges, and carried 1,939 passengers.

West breakwater, Colon—Due to the lack of piling, the single track trestle was not extended during the month, the total length to October 1 being 11,267 lineal feet. There were unloaded 8,711 cubic yards of Porto Bello rock, of which 4,253 cubic yards were handled by cranes and 4,458 cubic yards by the derrick barges, making the total to October 1, 91,854 cubic yards.

MUNICIPAL ENGINEERING.

The reservoirs, water mains, sewers, roads, and oil pipe lines were maintained and extended as required to facilitate construction work. Work was continued on the Colon street improvements.

Central Division.

During the month of September, the total amount of material excavated by the Central Division was 935,056 cubic yards, of which 164,742 cubic yards were classified as earth and 770,314 cubic yards as rock. The total of 935,056 cubic yards was removed by steamshovels. Of the total, 909,856 cubic yards were primary excavation in the Canal prism, 12,856 cubic yards from Obispo Diversion, 7,912 cubic yards from track cut-off at Station 1651, and 4,432 cubic yards from track cut-off at Plantation road.

The daily average number of steamshovels at work during the month was 32.71, and the total number of shovel days was 785, as compared with 34.11 at work during the month of August with 921 shovel days.

For comparison with the work done by steamshovels during the corresponding month

of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	C. Y. per shovel day
		Rock.	Earth.		
1911: Cu. Yds.		Cu. Yds.	Cu. Yds.		
Sept. . .	1,339,437	1,075,211	264,226	42.00	5.1,275.65
1912: Sept. . .	935,056	770,314	164,742	32.71	4.1,015.26

Rainfall at Empire: 1911, 5.46 ins.; 1912, 13.78 ins.

The above table shows the average output per shovel to be 20.41 per cent less in September, 1912, than in the corresponding month of 1911.

The total amount of material excavated from the Culebra section of the Central Division in September, 1912—935,056 cubic yards, was the lowest record in that section for the month of September since September, 1907, when only 753,468 cubic yards were removed.

The total estimated amount of material (dry excavation) to be removed in the Central Division, according to revised estimate of July 1, 1912, was 106,116,221 cubic yards; and, up to October 1, 1912, a total of 97,767,235 cubic yards had been removed, leaving 8,348,986 cubic yards yet to be removed in order to complete all dry excavation in the Central Division. From these figures, it will be seen that 92.13 per cent of all excavation in the Central Division had been accomplished up to the close of the month of September, and the amount to be removed was 7.87 per cent.

Considering the two sections which compose the Central Division, the excavation completed, and that yet to be completed at the close of September operations, was, as follows:

CULEBRA SECTION.		Cu. Yds.
Completed.....	85,382,570	
To be completed.....	8,348,986	
CHAGRES SECTION.		Cu. Yds.
Completed.....	12,384,655	

From the above figures, it will be seen that the Culebra section, locally known as "Culebra Cut", is 91.09 per cent completed, with 8.91 per cent to be completed. The Chagres section is completed so far as dry excavation is concerned, but it is estimated that about 300,000 cubic yards of wet excavation will have to be removed in this section.

During the month, 41,434 cubic yards of material were dumped in the embankment for the new roadbed of the relocation of the Panama railroad, increasing the total amount used for this purpose to 4,399,526 cubic yards.

During the month, no material was furnished to the Atlantic Division for use in the construction of Gatun Dam, the total amount remaining at 5,374,310 cubic yards.

There were furnished during the month to the Panama railroad for the breakwater in Colon 12,221 cubic yards, the total amount to date furnished for this purpose being 89,133 cubic yards.

During the month of September, 299 lineal feet of double track trestle were driven for the Naos Island breakwater, making a total to date of 2,317 lineal feet of double track trestle driven for this purpose. There were 24,020 cubic yards of material dumped during the month, a total of 848,965 cubic yards having been dumped to date. The total distance constructed to date is 16,483 lineal feet. There still remains to be driven about 204 lineal feet.

The daily average number of laborers at work in the whole division during the month

was 6,034, while the average number of gold men working was 568.

Pacific Division.

DISTRICT NO. 1—LOCKS, DAMS, AND DRY EXCAVATION.

Excavation—The total excavation during the month amounted to 150,561 cubic yards, of which 98,809 cubic yards were classified as earth and 51,752 cubic yards as rock.

Filling and embankment—During the month of September, 13,615 cubic yards of dry filling were added to the prism of Pedro Miguel west dam, increasing the total amount of material in place at the end of the month to 624,687 cubic yards. The backfill at Pedro Miguel was increased by 17,296 cubic yards, the total quantity in place at the close of the month being 710,722 cubic yards.

At Miraflores, the dry filling in the toes of the west dam was increased by 17,970 cubic yards, making the total quantities of dry and hydraulic filling in place at the end of the month 1,342,554 cubic yards, and 661,048 cubic yards, respectively. The backfill at Miraflores was increased by 51,834 cubic yards, increasing the total amount in place at the end of the month to 835,097 cubic yards.

Pedro Miguel Lock—During the month, excavation was continued in the Canal prism, south of the locks, in the vicinity of the guide wall extension, opening up a new drainage channel to divert the drainage from Culebra Cut away from the foundation work of guide wall extension. Two steamshovels were engaged in this work. Backfilling of east and west lock walls and filling in of lower approach wall were continued. One steamshovel completed the excavation for the northwest wing wall.

Concrete work—The total amount of concrete and large stone laid at Pedro Miguel was 3,039 cubic yards, as compared with 6,413 cubic yards during August. The concrete was placed, as follows: Twenty-five cubic yards in the northeast wing wall, 948 cubic yards in the northwest wing wall, 402 cubic yards in the east wall, 102 cubic yards in the center wall, 210 cubic yards in the west wall, 466 cubic yards in the floors, 105 cubic yards in the southeast wing wall, 618 cubic yards in the south center guide wall, 52 cubic yards around ducts in tunnel "A," and 111 cubic yards around ducts in tunnel "C."

OPERATION OF THE AUXILIARY CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours).....	8.00
Average number of hours per day worked laying concrete and large stone (actual working time).....	5.22
Average number of mixers per day.....	2.71
Average hourly output per mixer, actual working time (cubic yards).....	8.95
Large rock laid (cubic yards).....	3,039.00
Concrete laid (cubic yards).....	3,039.00

Total concrete laid (cubic yards) 3,039.00

Auxiliary plant consisted of four one-half cubic yard mixers, daily average number being 2.71. Concrete placed by mixers discharging directly into forms.

Miraflores Locks—Dry excavation was continued in the Canal prism, south of the locks, using an average of 10 steamshovels, the spoil being used for backfill of locks, for filling the west dam, and for filling swamps. One steamshovel was used to excavate the section of high ground crossing the north approach wall site; also, for a portion of the northeast wing wall area. Work of excavating for the spillway dam and junction with the lock wall was carried on during the month, both by hydraulic method and by hand. The construction of the north approach wall and the northwest wing wall was continued.

In order to facilitate the work in the forebay district, the dikes for preventing high river water from entering the locks were removed. A trestle is being driven for the construction of a new dike, which will permit excavation of the Canal by dredges to extend about 3,000 feet further north than the dike which at present separates the wet and dry excavation south of Miraflores. The intervening area is being drilled and shot to grade in the dry. The amount of iron placed in the masonry amounted to 1,436,729 pounds.

Concrete work—The total amount of concrete and large stone laid at Miraflores was 46,122 cubic yards, as compared with 75,388 cubic yards during August. The concrete was placed, as follows: Three thousand seven hundred and twenty-three cubic yards in north center guide wall, 3,101 cubic yards in east wall, 13,605 cubic yards in west wall, 12,588 cubic yards in center wall, 513 cubic yards in the floors, 2,354 cubic yards in the southeast wing wall, 10,144 cubic yards in south center guide wall, 51 cubic yards around ducts in tunnel "A," five cubic yards around ducts in tunnel "B," and 38 cubic yards around ducts in tunnel "C."

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	8.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	5.92	6.66
Average number of mixers per day	6.29	7.92
Average hourly output per mixer, actual working time (cubic yards)	29.57	22.19
Average amount of concrete and large stone laid per hour per berm or chamber crane (actual working time) (cubic yards)	43.52	.....
Large rock laid (cubic yards)	30,226.00	15,954.00
Concrete laid (cubic yards)	30,226.00	15,954.00
Total concrete laid (cu. yds.)	30,226.00	15,954.00

Permanent plant consisted of four berm cranes and four chamber cranes. Auxiliary plant consisted of two 2-cubic yard mixers, two 1-cubic yard mixers, and seven $\frac{1}{2}$ -cubic yard mixers; average number per day being 1.83, 1.12, and 4.91, respectively. The output was placed by both permanent and auxiliary plants, the latter consisting of locomotive cranes and derricks; also, a number of $\frac{1}{2}$ -cubic yard mixers discharged directly into forms.

DISTRICT NO. 2—DREDGING, BALBOA SHOPS, AND SHIPWAYS.

The following is a statement of the output of the six dredges which were in operation during the month, and of the amount of material excavated hydraulically:

DREDGE	Type.	WORK.		PLANT.		Total.	Remarks
		Earth	Rock	Earth	Rock		
		Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.		
Cardenas	Dipper	1,600	8,625	2,000	200	12,425	Scow measurement
Corozal	Ladder	58,500	46,800	.....	.....	105,300	Scow measurement
Marmot	Ladder	66,097	.....	.....	.....	66,097	Scow measurement
Badger	Ladder	4,900	.....	.....	.....	4,900	Scow measurement
Mole	Ladder	10,350	7,020	.....	.....	17,370	Scow measurement
Culebra	Suction	148,387	.....	.....	.....	148,387	Scow measurement
Total		289,834	62,145	2,000	.....	354,179	
Hydraulic excavation		120,337*	.....	15,422	200	135,759	Place measurement
Grand total		410,171	62,145	17,422	200	489,938	

*117,337 cubic yards excavated from Canal prism, south of Miraflores lock site; 3,000 cubic yards excavated from site of Miraflores spillway dam.

Chamé sand excavation—Approximately 39,385 cubic yards of sand were excavated at Punta Chamé and delivered at Balboa sand bins.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

The reservoirs, water mains, sewers, and

oil pipe lines were maintained and extended as required to facilitate construction work.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.	
Length of working day (hours)	8.00
Average number of hours per day (actual working time)	6.30
Average number of cubic yards crushed per hour per working day	191.57
Average number of cubic yards crushed per working hour	256.87
Total output for the month (cubic yards)	41,379

Quartermaster's Department.

LABOR.

Labor—The force has continued about the same. The McClintic-Marshall Construction Company has increased its force very materially. There have been a number of calls for 10-cent laborers, but the shortage during the month has not been acute.

Buildings—Two type-14 houses at Culebra have been taken down, and work is to be started on the demolition of another building of this type. The Young Men's Christian Association building at Culebra, and two French cottages, were demolished during the month, all of the above having become necessary on account of slides.

Quarters—There has been an increase of over 400 bachelors in gold quarters and over 400 West Indians in silver quarters. There has been considerable congestion in bachelor quarters at the Pacific end, and also in the Gatun district.

Material and supplies—The total value of material received during the month was \$885,054.85. Supplies were delivered by 34 steamers, the total weight of cargo, exclusive of lumber and piling being 14,868 tons.

Subsistence Department.

The operation of the European laborers' messes, colored laborers' kitchens, and line hotels showed a net profit of \$2,896.11. The operation of the Hotel Tivoli showed a net profit of \$99.35. There was a net loss on penitentiary restaurants, tugs, and dredges of \$25.08, making the net profit on subsistence operations for the month \$2,970.38.

Department of Civil Administration.

During the month, one criminal case was disposed of in the Supreme Court; 31 civil and 39 criminal cases in the Circuit Courts; and 42 civil and 599 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES.

Money order sales for September amounted to \$369,094.81, and the fees to \$1,765.75. Receipts from stamp and card sales and newspaper postage aggregated \$6,906.49.

vessels cleared from the port of Ancon; and 17 vessels entered at and a like number cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 593, of whom 544 were men and 49 women. Twenty nations, or 47 separate states and dependencies were represented. The total number of arrests for the month was an increase of 71, as compared with the month of August. Eight convicts were committed to the penitentiary and 10 were discharged, leaving 135 convicts in confinement at the close of the month. The cost of guarding and subsisting the convicts was \$2,702.15, and the value of their work on the Canal Zone roads was \$2,260.15.

DIVISION OF FIRE PROTECTION.

Five fires were reported in the Canal Zone during the month. The damage to private property was \$40.

DIVISION OF PUBLIC WORKS.

In the city of Panama, the average daily consumption of water was 1,562,266 gallons, and in Colon, 1,074,184 gallons. The usual inspection and maintenance work in this division was performed during the month.

DIVISION OF SCHOOLS.

The schools were not in session during the month.

Department of Sanitation.

The total number of deaths from all causes among employes was 39. These were divided, as follows: From disease 27, and from violence 12, giving the annual average per thousand of 6.36 and 2.83, respectively, on the basis of the number of employes estimated by the Department of Sanitation. The annual average death rate per thousand among employes for the month of September, 1911, was 14.43.

The annual average death rate per thousand in the Canal Zone, and in the cities of Colon and Panama, including both employes and nonemployes was 22.42. This rate is based upon a population in the Canal Zone of 62,810, according to the census of February, 1912, and a population in Panama and Colon of 47,172, and 20,232, respectively, as estimated by the Department of Sanitation. The annual average death rate per thousand among the same classes of population for the month of September, 1911, was 21.56.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes, was: For whites, 4.92; for blacks, 6.81; giving a general average for disease of 6.36. For the same month during 1910, the annual average death rate per thousand from disease among whites was 3.58, blacks, 9.46, giving a general average of 7.89; and for the same month during 1911, whites 5.95; blacks 12.24, giving a general average of 10.63.

Among employes during the month, deaths from the principal diseases were, as follows: Dysentery, bacillary, one; malaria fever, E. A., two; lobar pneumonia, two; tuberculosis, eight, leaving 14 deaths from all other diseases, and 12 deaths from external violence.

No cases of yellow fever, smallpox, or plague originated on, or were brought to the Isthmus during the month.

Respectfully,

GEO. W. GOETHALS,
Chairman.

The total collection of revenues made by the division was \$24,721.10, and the collection on account of court fines, costs, and fees, \$2,773.41. During the month, a total of \$111,786 was deposited in postal savings accounts, and a total of \$91,999 was withdrawn.

Twenty-eight vessels entered at and 26

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

Arrangements have been made with the Panama railroad and the Central and South American Telegraph Company, whereby special telephone wires, operators, and messengers will be employed by the Y. M. C. A., to furnish election returns direct to the various clubhouses, immediately upon their receipt at the cable office. Special programs, mock elections, etc., will be furnished for the amusement of spectators during the interim between the receipt of returns.

The schedule of moving pictures for the week of October 28 to November 2 is, as follows: Monday, Empire; Tuesday, Culebra; Wednesday, Corozal; Thursday, Gatun; Friday, Gorgona; Saturday, Cristobal.

COROZAL.

The local handicap pool tournament is about two-thirds over, and Messrs. Patrick, Souder, and Staggs are in the lead.

An old-fashioned Halloween social is scheduled for Thursday night, October 31.

The Gatun basketball team will play Corozal on Saturday evening, October 26, at Corozal.

The Empire bowling team will play the Corozal team on the local alleys, on Saturday, October 26. The result of last Saturday's games was: Culebra, 2; Corozal, 1.

EMPIRE.

The tournament games bowled on Saturday, October 19, between Empire and Cristobal, on the Empire alleys, resulted in Empire losing two games. The scores were, as follows:

Empire..... 857..... 886..... 778
Cristobal..... 865..... 778..... 875

Mr. D. H. McCollough won the October handicap pool tournament. Twenty men entered.

On Saturday, October 19, the members of the boys' department, to the number of 15, were taken on an outing to Old Panama. Mr. Russell was in charge.

GORGONA.

The Gorgona chorus has been organized, and will soon be ready to give special concerts.

A special program in politics has been arranged for the following parties: Independent, Republican, Democratic, Socialist, and Progressive. The different parties are headed by committees; each have elected a local commission, and on election day, Gorgona will vote on the several candidates.

The gymnasium classes meet Tuesday and Thursday nights at 7.45 o'clock. Every one is invited.

GATUN.

The San Blas trip, applications for which have been received at the clubhouse, will not be taken, no boat being available.

Of the 416 members of the Gatun clubhouse, 60 are employees of the McClintic-Marshall Company. A special effort is being put forth to induce more employees of this company to join the association.

Y. M. C. A. souvenir books are being sold at the desk at \$1 each.

A political campaign will be conducted in Gatun, beginning October 21. Party conventions will be held, and national and local candidates named. The election takes place on November 5.

A firm of bowling alley manufacturers has donated a loving cup to the Gatun association, as a prize for the pool team which recently won the all-Isthmian tournament.

Louis DePoorter won first prize in the "Lock City" billiard tournament, and will receive a handsome gold medal. Chas. C. G. Wurster will be given a gold medal for second prize, and J. T. Neely, a silver medal for third prize. Mr. DePoorter won the prize also, of a cue for the high run of the tournament.

The following men have signed up for the handicap "Pocket billiard tournament": Coleman, 60; Townsley, 50; Cheeks, 60; Dewey, 80; Wurster, 75; Gamble, 50; Miller, 60; Johnson, 60; Bellringer, 60; Eggleston, 60; and Dennis, 50.

CRISTOBAL.

During the past week, the volleyball men have been on the floor two nights with an attendance of 25.

The basketball game between Cristobal and Corozal was played on the Cristobal floor. The men played in the game are as follows:

Corozal..... Cristobal.
L. C. Wright..... right forward..... Mathues
Ed. Roberts..... left forward..... M. Schwallenberg
Chadbourne..... center..... Howe
R. S. Porter..... right guard..... Cousineau
Reed Morris..... left guard..... Hughes
Morton relieved Howe, and H. Schwallenberg relieved M. Schwallenberg in the second half.

Score: Corozal, 13; Cristobal, 11.

Field goals—Wright, 2; Roberts, 5; Chadbourne, 2;

Mathues, 2; Howe, 2; . One goal was made for Cristobal accidentally by Porter of Corozal.

Free throws—Wright, 2; Howe, 1.

Cristobal claimed two field goals which were disallowed; also, one foul. Game finished under protest.

The highest score in tenspins for the week was made by W. Burn—222.

On Wednesday, October 16, Mr. Walter Shutes engaged seven of the local chess players in a simultaneous match, winning eight games and losing one, as follows:

	Won.	Lost
Alper.....	1.....	0
Rattiner.....	0.....	1
DuBois.....	0.....	1
Cleall.....	0.....	1
Parker.....	0.....	1
Patterson.....	0.....	2
Gill.....	0.....	1

PORTO BELLO.

Under the supervision of the ladies, plans are being formed to celebrate Halloween in a fitting manner. Mrs. Cornelison, Mrs. Smith, Mrs. Cleveland, and Miss Moon are in charge of the committees.

The "Hook worm" was the theme for consideration at the discussion club at its last meeting. Dr. Gibson was in charge. At the meeting, Thursday, November 3, the subject will be "How shall users of the Panama Canal be taxed?"

An informal song service was held on Saturday evening, October 19. The program consisted of popular songs, together with vocal solos by Messrs. Ross and Dickson.

Rainfall from October 1 to 19, 1912, Inclusive.

STATIONS.	Maximum in one day.	Total for period.	Date.
<i>Pacific Section—</i>	<i>Ins.</i>	<i>Ins.</i>	
Ancon.....	3.40	8.18	12
Balboa.....	3.83	7.68	12
*Miraflores.....	1.52	6.07	3
Pedro Miguel.....	1.00	4.08	2
Rio Grande.....	.83	2.83	10
<i>Central Section—</i>			
Culebra.....	1.08	3.00	10
*Camacho.....	1.42	3.96	7
Empire.....	1.18	3.96	7
Gamboa.....	2.01	7.05	10
*Juan Mina.....	2.00	6.61	19
Alhajuela.....	1.96	5.79	14
*El Vigia.....	1.17	5.57	14
*Gorgona.....	2.05	8.35	7
*Frijoles.....	3.36	12.43	7
*Monte Lirio.....	2.10	11.01	16
<i>Atlantic Section—</i>			
Gatun.....	2.04	7.73	7
*Brazos Brook.....	2.15	8.25	7
Colon.....	1.23	7.33	7
Porto Bello.....	2.98	11.76	15

*Standard rain gage—readings at 5 p. m., daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., October 18.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, October 19, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigia.	Alhajuela.	Gamboa.	Gatun Lake.
Sun., October 13.....	127.8	93.9	48.6	47.9
Mon., October 14.....	128.5	94.4	49.2	48.0
Tues., October 15.....	127.6	94.0	49.2	48.2
Wed., October 16.....	127.2	93.5	48.7	48.5
Thurs., October 17.....	128.8	94.2	49.0	48.8
Fri., October 18.....	129.0	93.8	50.1	49.4
Sat., October 19.....	129.5	95.0	50.4	49.8
Height or low water to the nearest foot.....	125.0	91.0	44.0	

Married.

JENSEN-McCORMACK—At Saint Rita's Church, Gatun, C. Z., on Thursday, October 17, Mary Agnes McCormack of Westchester, N. Y., to Frank Jensen of Brooklyn, New York, the Reverend Father Jiamona officiating. Canal Zone residence, Gatun.

VAN DEUSEN-HILL—At Cristobal, on October 14, Louisa Mara Hill of New York, to Hermann T. Van Deusen of Panama. Isthmian residence, Panama.

LOST—In Colon, Saturday night, October 19, between the railway station and house No. 11, Colon

Beach, a green silk umbrella with gold handle. Reward, if returned to W. J. Bissell, house No. 11, Colon Beach.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending October 30, 1912, (75th meridian time):

DATE.	High		Low	
	A.M.	A.M.	P.M.	P.M.
October 24.....	2.20	8.35	2.43	8.48
October 25.....	2.53	9.10	3.16	9.23
October 26.....	3.26	9.46	3.50	10.00
October 27.....	4.00	10.22	4.27	10.37
October 28.....	4.37	11.00	5.02	11.15
October 29.....	5.14	11.40	5.42	11.56
October 30.....	5.55	12.23	6.05	.....

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 92 per cent completed, 207,179 cubic yards, out of a total of 225,000, having been placed at the closed of work on October 19. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete laid.	Hours worked.	No. mixers used.
	Cu. Yds.		
October 14.....	72	6	1
October 15.....	52	4.25	1
October 16.....	52	5	1
October 17.....	96	8	1
October 18.....	84	8	1
October 19.....	8	.50	1
Total.....	364	31.75	1
Previously reported.....	206,815		
Grand total.....	207,179		

Obituary.

Thomas Stannage, an employee, at Pedro Miguel, of the First Division of the Chairman's Office, died in Ancon Hospital on October 14, after a month's illness. He was 45 years of age, married, and had been employed on the Isthmus one day.

Red Cross Finances.

The financial statement of the Canal Zone chapter, American National Red Cross, for the month of September, 1912 is, as follows:

RECEIPTS.	
September 1, On hand.....	\$2,006.36
18, Returned by ex-employee of loan made November 29, 1911.....	150.00
Total receipts.....	\$2,156.36
DISBURSEMENTS.	
September 6, Postage.....	\$ 2.00
6, Relief of patient in Colon Hospital, deported to Jamaica.....	7.00
18, Meals furnished destitute man at Cristobal.....	25.50
20, Relief of destitute missionary, Colon.....	60.00
30, Relief of wife of ex-employee who is ill in Ancon Hospital.....	20.00
Total disbursements.....	\$ 114.50
September 30, Balance on hand.....	\$2,041.86
JOHN L. PHILLIPS, Treasurer.	
Approved:	
WM. L. SIBERT, Vice-Chairman.	

United Spanish War Veterans.

A special meeting of Chagres Camp, No. 1, United Spanish War Veterans, will be held at the Empire lodge hall, on Sunday, October 27, at 3 p. m., for the purpose of making arrangements to meet the Congressional Committee when it comes. Congressman Cragg will be here, and it is desired to honor him on account of his work in behalf of the veterans. Remarks for the good of the order will be made, and refreshments will be served. A large attendance is requested.

OFFICIAL CIRCULAR.

Acting Superintendent of Telegraph and Telephone.

PANAMA RAILROAD COMPANY.
COLON, R. P., October 15, 1912.

CIRCULAR No. 171:

Heads of Departments—Effective this date, Mr. C. J. Geldes will act as superintendent of telegraph and telephone during the absence of Mr. C. L. Bleakley, on leave.

J. A. SMITH, General Superintendent.

Misdirected Letters.

ANCON, C. Z., October 23, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressee:

Ashman, Miss Irene	Meyer, Mac
Baker, Archibald C.	Nickerson, F. M.
Biegle, F. W.	Solomon, A. M.
Bennett, C. F.	Standish, Nathaniel R.
Burns, Walter	Strom, Carl A.
Carlsen, O. A.	Toll, Lawrence
Davis, Hugh W.	Town, Harry E.
Drayton, Allan O.	White, H. J.
Ennis, William	Williamson, D. S.
Hill, Robert	Woolworth, Porter A.
Huson, Claude	Wright, Thos. Emanuel
McDaid, John A.	Zemer, Mr.
McGee, Peter	

LETTERS UNCALLED FOR OCTOBER 16, 1912.

Beard, Arthur	Johnson, C. F.
Bonus, Ino. E.	Kitchen, F. L.
Booth, Jim	MacReeves, Mr.
Booth, James T.	Marquez, F. D. (pkg.)
Curtis, Clarence	Macinniss, Charles D.
Curtis, A. S.	Mills, Roscoe L.
Deane, Jesurine	Padgett, Chas.
Deavours, Sam. J.	Sawett, Leonard (pkg.)
Donnelly, Peter	Sunstrom, Mrs. C. M.
Grant, F. N. W.	Van Houten, David
Hageman, Victor	Wilson, Mrs. Geo.
Jay, William C.	

Supplies for the Canal.

The following steamers with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the two weeks ending October 19:

Ancon, October 5, from New York, with 126,349 bags cement, for Pacific Division; 150 barrels cement, for Panama Railroad Company; 900 kegs wire nails, 150 barrels fire clay, for stock.

Carrillo, October 6, from New York, with 72 cases elevators, for superintendent of erection; 34 barrels galvanized conduit, for Mechanical Division; 6 cases electrical material, for Panama Railroad Company; 190 coils Manila rope, 10 cases hardware, for stock.

Sachsenwald, October 7, from Antwerp, with 22 cases valve machinery for superintendent of erection.

Demara, October 6, from Bellingham, Washington, with 179 pieces piling, 954 bales hay, for stock.

Alexandrian, October 6, from Liverpool, with 200 barrels carbolic acid, for stock.

Santa Marta, October 7, from New York, with 102 cases soap, 3 cases sheet brass, for stock; 185 packages track material for superintendent of erection.

Atenas, October 10, from New Orleans, with 286 pieces piling, 1,370 pieces lumber, 98 sacks feed, 15 cases neatfoot oil, for stock; 689 pieces lumber, for Mechanical Division; 9,600 sacks cement plaster, for Panama Railroad Company.

Advance, October 11, from New York, with 25 barrels fluorspar gravel, 31 pieces car knuckles, 77 bundles castings, 33 pieces locomotive tires, 10 cases dry cell's, for Mechanical Division; 13 crates marble, for Panama Railroad Company; 34 cases drugs and sundries, for Sanitary Department; 40 cases electrical material, 63 cases insulators, 27 packages steel, for superintendent of erection; 16 reels wire rope, for Panama Railroad Company; 20 cases ranges and parts, 100 sacks wooden plugs, 109 cases bolts and washers, 20 kegs horseshoes, 40 kegs wire nails, 400 kegs bolts, 53 pieces oak lumber, 21 reels wire rope, 10 barrels castings, 300 pieces iron pipe, for stock; and a miscellaneous cargo, the whole consisting of 1,566 packages, weighing 180 tons.

Bongor, October 11, from Baltimore, with 282 cases blasting caps, 19 drums gas engine oil, 4,834 pieces sewer pipe, 550 bundles splice bars, 100 cases turpentine, 250 kegs white zinc, 5,574 pieces wrought iron pipe, 1,158 bundles wrought iron pipe, 18 pieces sheet steel, 601 pieces steel bars, 60 bundles steel bars, for stock; 644 bundles steel bars, for Division of Fortifications; 1,264 bundles steel bars, for Pacific Division; 435 pieces beams and girders, for Panama Railroad Company; 402 crates track castings, 154 cases gate machines, 200 cases track machinery, 183 cases structural steel, for superintendent of erection.

Turrialba, October 13, from New York, with 18 cases ink and mulage, 13 cases paint, 10 cases packing, 23 cases wire cloth, 135 kegs nuts, for stock; 12 barrels

graphite paint, 70 packages castings, 184 packages track material, for superintendent of erection; 4 crates plumbing material, for Panama Railroad Company.

Prinz August Wilhelm, October 14, from New York, with 5 cases stationary, for stock.

Cristobal, October 15, from New York with 177,293 bags cement, 16 cases boiler coverings, 27 pieces castings, for superintendent of erection; 80 pieces steel channels, Panama Railroad Company; 70 packages pipe-fittings, 20 cases valves, 10 cases hardware, for stock.

Panama, October 15, from New York, with 6 cases elevator car material, 19 reels wire, for Panama Railroad Company; 15 cases lamps, 12 cases lanterns, 10 cases rubber hose, 8 cases grindstones, 11 cases magnesia covering, 61 crates galvanized pails, 15 cases mining machinery, 10 cases belt dressing, 8 reels wire rope, 8 bales rakes, for stock; and a miscellaneous cargo, the whole consisting of 300 packages, weighing 50 tons.

Metapan, October 16, from New York, with 252 bundles steel bars, for stock; 20 cases motors, for superintendent of erection.

Parissima, October 18, from New Orleans, with 178 tons pig iron, 3,325 pieces lumber, for Mechanical Division; 50 barrels plaster paris, for Panama Railroad Company; 96 packages push cars, 20 cases paint, 354 pieces piling, 1,308 pieces lumber, for stock.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Hotel Tivoli, Ancon, C. Z., Sunday, October 27, at 8 p. m. The program follows:

1. March—*King of the Air*.....Everlof
2. Excerpts from *The Pink Lady*.....Curry
3. Waltz—*Imagined Dream*.....Rosas
4. Overture—*Le Pre aux Champs*.....Herold
5. Intermezzo—*Indian Summer*.....Moret
6. (a)—*Il onnespise*.....Dvorak
- (b)—*Three Little Songs from Carmen*.....Bizet
7. Potpourri of popular songs.....Harris
8. —*La Paloma*.....Vendier
9. March—*Yankee Doodle*.....Kaine

CHARLES E. JENNINGS, Musical Director.

The next concert will be given at Gatun, November 3, at 5 p. m.

COMMISSARY DEPARTMENT.

Cold Storage Prices.

The following changes have been made in the prices of cold storage supplies:

Eggs fresh, reduced to 35 cents per dozen, or 18 cents to the half dozen.

Birds fresh, advanced to 15 cents per pound.

Halibut fresh, advanced to 15 cents per pound.

Oysters in quart kegs advanced to 50 cents a keg.

Bacon, breakfast, whole piece, advanced to 25 cents a pound.

Bacon, breakfast, sliced, advanced to 26 cents a pound.

Celery, reduced to 5 cents a head.

Apples, reduced to 4 cents a pound.

Lemons reduced to 24 cents a dozen.

Jersey sweet potatoes, cantaloupes, grapes, watermelons, and peaches, out of stock.

Sale of Surveying Instruments, Compasses, and Ship's Log.

OFFICE OF DEPOT QUARTERMASTER.

MOUNT HOPE, C. Z., October 21, 1912.

Sealed bids will be received at the office of the Depot Quartermaster, Mount Hope, C. Z., until 2 o'clock p. m., November 9, 1912, when they will be opened in the presence of attending bidders, for any and all surveying instruments, compasses, and ship's log now on hand in the storehouse for obsolete material. These instruments may be seen on any working day between the hours of 7 to 11 a. m., and 1 to 5 p. m., on application to this office. The right is reserved to reject any or all bids or any combination of bids. Bids must be sealed and plainly marked: "Proposal to purchase Surveying Instruments," and addressed to the Depot Quartermaster, Mount Hope, C. Z.

CHARLES L. PARKER,

Acting Depot Quartermaster.

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday, and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

LOST—Large coral cameo, plain gold mounting, between Y. M. C. A. clubhouse, Cristobal, and Colon Hospital, on Sunday evening, October 20. Reward, if returned to Colon Hospital office.

FOUND—Pocketbook containing money and metal check. Owner may have same by applying to G. A. E. Barnes, office of McClintic-Marshall Company, Pedro Miguel.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL

Colon.....	P. R. R.	Monday.....	Oct. 21
Advance.....	P. R. R.	Saturday.....	Oct. 26
Panama.....	P. R. R.	Saturday.....	Nov. 2
Allianca.....	P. R. R.	Friday.....	Nov. 8
Colon.....	P. R. R.	Thursday.....	Nov. 14
Advance.....	P. R. R.	Wednesday.....	Nov. 20
Panama.....	P. R. R.	Tuesday.....	Nov. 26
Allianca.....	P. R. R.	Tuesday.....	Dec. 3
Colon.....	P. R. R.	Monday.....	Dec. 9
Advance.....	P. R. R.	Saturday.....	Dec. 14
Panama.....	P. R. R.	Friday.....	Dec. 20
Allianca.....	P. R. R.	Friday.....	Dec. 27

CRISTOBAL TO NEW YORK.

Allianca.....	P. R. R.	Sunday.....	Oct. 27
Colon.....	P. R. R.	Saturday.....	Nov. 2
Advance.....	P. R. R.	Thursday.....	Nov. 7
Panama.....	P. R. R.	Thursday.....	Nov. 14
Allianca.....	P. R. R.	Wednesday.....	Nov. 20
Colon.....	P. R. R.	Tuesday.....	Nov. 26
Panama.....	P. R. R.	Sunday.....	Dec. 8
Allianca.....	P. R. R.	Sunday.....	Dec. 15
Colon.....	P. R. R.	Saturday.....	Dec. 21
Advance.....	P. R. R.	Thursday.....	Dec. 26
Panama.....	P. R. R.	Thursday.....	Jan. 2
Allianca.....	P. R. R.	Wednesday.....	Jan. 6

NEW YORK TO COLON.

Prinz Joachim.....	H.-A.	Saturday.....	Oct. 19
Sixaola.....	U. F. C.	Saturday.....	Oct. 19
Almirante.....	U. F. C.	Wednesday.....	Oct. 23
Orotava.....	R. M.	Saturday.....	Oct. 26
Prinz Eitel Friedrich.....	H.-A.	Saturday.....	Oct. 26
Carillo.....	U. F. C.	Saturday.....	Oct. 26
Santa Marta.....	U. F. C.	Wednesday.....	Oct. 30
Prinz August Wilhelm.....	H.-A.	Saturday.....	Nov. 2
Turrialba.....	U. F. C.	Saturday.....	Nov. 2
Metapan.....	U. F. C.	Wednesday.....	Nov. 6

COLON TO NEW YORK.

Turrialba.....	U. F. C.	Tuesday.....	Oct. 22
Metapan.....	U. F. C.	Thursday.....	Oct. 24
Prinz Sigismund.....	H.-A.	Monday.....	Oct. 28
Tivives.....	U. F. C.	Tuesday.....	Oct. 29
Thames.....	R. M.	Tuesday.....	Oct. 29
Zacapa.....	U. F. C.	Wednesday.....	Oct. 31
Prinz Joachim.....	H.-A.	Monday.....	Nov. 4

NEW ORLEANS TO COLON.

Abangarez.....	U. F. C.	Saturday.....	Oct. 19
Cartago.....	U. F. C.	Wednesday.....	Oct. 23
Atenas.....	U. F. C.	Saturday.....	Oct. 26
Heredia.....	U. F. C.	Wednesday.....	Oct. 30
Parissima.....	U. F. C.	Saturday.....	Nov. 2
Abangarez.....	U. F. C.	Saturday.....	Nov. 9

COLON TO NEW ORLEANS.

Parissima.....	U. F. C.	Thursday.....	Oct. 24
Abangarez.....	U. F. C.	Thursday.....	Oct. 31
Cartago.....	U. F. C.	Thursday.....	Oct. 31
Atenas.....	U. F. C.	Thursday.....	Nov. 7
Heredia.....	U. F. C.	Thursday.....	Nov. 7
Parissima.....	U. F. C.	Thursday.....	Nov. 14

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 2 p. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston at 10 a. m., on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* sail at 2 p. m., and call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending October 19:

Arrivals—October 13, *Santa Rita*, from San Francisco; October 15, *Quito*, from Guayaquil, and intermediate points; October 15, *Peru*, from Guayaquil; October 16, *Maniara*, from Callao; October 17, *Chile*, from Guayaquil; October 19, *City of Para*, from San Francisco; October 19, *Manari*, from intermediate points.

Departures—October 13, *Guatemala*, to Callao; October 13, *Manari*, to Buenaventura; October 14, *Portland*, to San Francisco; October 15, *Ucayali*, to Callao; October 15, *Asen*, to Valparaiso; October 15, *Santa Rita*, to San Francisco; October 19, *Barracouta*, to San Francisco; October 19, *City of Panama*, to San Francisco.



The Canal Record

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The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication, or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

New Bridge at Monte Lirio in Use.

The new railroad bridge across the Gatun River at Monte Lirio was placed in regular service on October 26. The permanent bridge is of three spans, using some of the 103-foot girders from the demolished Barbacoas bridge of the old main line, across the Chagres River near San Pablo, and is supported on concrete buttresses and piers. Its center span is to be a bascule. Delivery of the lifting mechanism has been greatly delayed by the contractor, but when it arrives, its installation may be effected without interference to traffic.

Additional Bachelor Accommodations at Gatun.

Owing to the increase in the number of Americans employed by the gate and emergency dam contractors at Gatun, the accommodations for bachelor employees have been entirely exhausted, and it has been necessary as a temporary expedient, to assign four men to a room in several of the Type-5 houses. This situation will be relieved by the conversion of some labor camps into bachelor quarters, and by moving families occupying nonhousekeeping quarters into housekeeping quarters. The number of bachelor employees quartered at Gatun on Saturday, October 26, was 715, of which 482 were Canal Commission employees, and 233, men employed by the contractors.

Public Telegraph Office in Colon Station.

The public telegraph office for Colon and Cristobal has been moved from the general office building of the Panama Railroad Company to the Colon passenger station, in which it is conveniently located in the first-class waiting room, next to the entrance gates. The office was opened on October 22, and is operated in connection with a bureau of general information concerning Cristobal and Colon, the railway and steamship schedules, and accommodations on the Isthmus

for the traveler. The rate for telegraph messages between any points on the Panama railroad is twenty-five cents for 10 words, or less, and two cents for each word above 10, for unrepeat messages; the address and signature are counted as part of the body of the message. The hours at which the office is open on week days, are from 8 to 11.25 a. m., and from 1.30 to 6 p. m.; and on Sundays and holidays, from 9 to 11 a. m., and from 2 to 4 p. m.

Small Slide on Gold Hill.

The recent heavy rains have started a small slide of material from the south shoulder of Gold Hill. The mud flowed down into the Cut and covered some of the construction tracks. The quantity of material involved is small, amounting to about 5,000 cubic yards.

Award on Structural Steel for Permanent Shops.

Award has been made to the United States Steel Products Company for furnishing and erecting in place structural steelwork, amounting to approximately 7,000,000 pounds, required in the construction of the following permanent shop buildings at Balboa:

Building No.	Type.
1.	Machine, erecting, and tool shops.
2.	Forge shop.
3.	Steel storage shed.
4.	Boiler and ship fitters' shop.
5.	General storehouse.
6.	Paint shop.
7.	Car shop.
8.	Planing mill.
9.	Galvanizing building.
10.	Lumber and equipment shed.
11.	Pattern storage building.
12.	Foundry.
13.	Coke shed.
14.	Boiler house.
15.	Roundhouse.
16.	Gas house

Circular No. 730, under which the bids were opened, not only called for the erection of the structural steelwork in place, but, in the case of the machine, erecting, and tool shops, forge shop, steel storage shed, boiler and ship fitters' shop, galvanizing building, and foundry, included erection of the crane rails. Two separate proposals were called for, as follows:

Bid A—Price for furnishing and erecting all of the structural steel work in place, including erection of the crane rails.

Bid B—Price for furnishing a portion of the structural steelwork, delivered, unloaded, and stored at the building site by the contractor, but erected and field painted by the Canal Commission.

The purpose of the two bids was, that while all of the above work would be awarded to one contractor, the award to be based upon the price per pound in Bid A, conditions might prevent the completion of the foundations for the two bays and the crane runway extension in the machine, erecting, and tool shops, in time for the contractor to com-

plete the erection of the steelwork for those sections of the structures, including crane rails, in which event, the erection would be performed by the Canal Commission, and payment on material not erected by the contractor, based on Bid B.

The United States Steel Products Company was the lowest responsible bidder in both instances, and its offer was more favorable as to time of completion. Its price per pound for the structural steel under Bid A, was three and six-tenths cents, and under Bid B, two and three-fourths cents, the total contract representing a value of about \$410,000. The company proposes to begin erection on May 1, 1913, and to complete the work on October 1 of the same year.

All the material for the buildings mentioned above is to be furnished and erected complete by the contractor, with the exception of metal screens, roofing and siding, masonry plates, anchor bolts, and anchor angles, which will be supplied and set up by the Canal Commission. All of the foundations will be built by the Commission also. A general description of the permanent facilities at the Atlantic and Pacific entrances to the Canal will be found on another page of this issue of THE CANAL RECORD.

Structural Steel for Gatun Hydroelectric Station.

In response to invitations under circular No. 736, bids were opened in Washington on October 12 for furnishing the structural steel required for the Gatun hydroelectric station in the following amounts:

Gatehouse.	Pounds
1. Structural steel.....	29,850
2. Grating*.....	25,780
3. Stairways*.....	2,660
4. Miscellaneous steel*.....	22,800
5. Stop logs*.....	20,550
Total.....	101,640
Station building.	Pounds
6. Building columns.....	128,140
7. Gallery columns.....	13,880
8. First floor steel.....	3,690
9. First gallery steel.....	23,415
10. Second gallery steel.....	68,490
11. Roof trusses.....	162,700
12. Purlins.....	136,660
13. Wall trusses.....	34,020
14. Crane runways.....	57,580
Total.....	628,575
Grand total.....	730,215

*To be erected by the Canal Commission.

The bid of the United States Steel Products Company for fabrication only of all of the above items was \$25,400, with delivery complete in 250 days.

The bid of the same company for delivery and erection of the steelwork on item 1, and items 6 to 14, and fabrication of the steel on items 2 to 5, inclusive, was \$35,300, delivery of all material on the Isthmus to be made in 250 days, and the erection to be made in 45 days thereafter.

The bid of the Ritter-Conley Company of Pittsburgh was for fabrication only; amount,

(Continued.)

The time of delivery was considered as a very important factor, inasmuch as the plant and equipment for the station are either under contract, or already on the Isthmus. The date of delivery specified in the bids of the United States Steel Products Company was regarded as unsatisfactory, and representations were made to that effect. Attention was called to the damage of one-tenth of one per cent a day set forth in circular No. 736, which would be offered for early delivery. A reply to this was received stating that delivery would be anticipated as much as possible, and that the unusual length of time for making delivery was due to a congestion in the steel mills. The United States Steel Products Company, the lowest bidder, has been awarded the contract.

The concrete work in the Spillway of Gatun Dam is over 92 per cent completed, 207,441 cubic yards, out of a total of 225,000, having been placed at the close of work on October 26. A statement of the amount laid each working day last week, and of the total in place, follows:

Lieut.-Col. T. C. Dickson, Capt. R. E. Wood, and Mr. H. S. Farish, have been appointed a committee in connection with the appraisal of Marion and Bucyrus steam-lovels to be offered for sale.

On the night of the national election in the United States, November 5, the Panama railroad will run passenger trains on the regular Saturday night schedule, in order to afford employees along the line opportunity to visit points at which the returns from the election will be received. The returns will

The Ancon lodge, Knights of Pythias, has made arrangements to receive election returns at Ancon Hall, on the evening of November 5.

Six of the eight new electric cargo-handling cranes erected on the old steel wharf at Balboa have been completed and are giving service. The other two will be ready for use in a few days. The official test of these machines has not yet been held. Two of the old cranes, placed out of commission when the lumber wharf was demolished, will be set up on the steel wharf.

Over 93 per cent of the concrete for the locks is in place, the amount at the close of work on October 26, being 4,070,166 cubic yards, out of a total of approximately 4,352,563. A total of 14,235 cubic yards of concrete was laid in the locks during the week ending October 26.

Over 92 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on October 26 being 1,901,138 cubic yards, out of a total of 2,050,000. A statement of the amount of concrete placed in the locks each working day of the week ending October 26, and of the total, follows; and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue:

PEDRO MIGUEL LOCK.

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2 cubic yard mixers.			½ cubic yard mixer.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked	No. of mixer			
October 21.....				<i>Cu. Yds.</i> 180	20.00	3	<i>Cu. Yds.</i> 19	<i>Cu. Yds.</i> 19	<i>Cu. Yds.</i> 19
October 22.....				226	23.50	3	8	.....	234
October 23.....				227	24 00	3	4	.....	233
October 24.....				342	33 00	4	25	.....	367
October 25.....				274	22.50	3	15	.....	289
October 26.....				267	25.50	3	160	.....	427
Total.....				1,516	148.50	3.17	231	.....	1,747
Previously reported.....								4.493	882.775
Grand total.....								4.493	884.520

Over 90 per cent of the concrete for the system of two twin locks at Miraflores was in place October 26, the total amount on that date being 1,284,502 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.									Mixed by hand.	Large stone.	Total.
				2-cubic yard mixers.			1-cubic yard mixer.			½-cubic yard mixer.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
October 21.....	<i>Cu. Yds.</i> 1,478	29.17	8	<i>Cu. Yds.</i> 392	4.00	1	<i>Cu. Yds.</i> 140	8.00	2	<i>Cu. Yds.</i> 301	34.00	5	<i>Cu. Yds.</i> 2	<i>Cu. Yds.</i>	1,921
October 22.....	1,460	26.00	8	.....	.....	.....	144	7.00	2	80	12.00	2	14	.....	1,936
October 23.....	1,462	28.34	8	94	3.00	1	110	7.00	1	306	32.00	4	21	.....	1,993
October 24.....	1,574	36.83	8	178	5.00	1	32	1.50	1	165	21.00	4	41	.....	1,990
October 25.....	1,532	35.34	8	74	4.00	1	194	10.50	2	210	24.00	5	40	.....	2,050
October 26.....	1,292	25.16	8	62	3.50	1	.....	.....	.....	396	36.00	5	40	.....	1,790
Total.....	8,644	180.84	8	800	19.50	1	620	34.00	1.6	1,458	159.00	4.16	158	.....	11,680
Previously reported.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,693	.....	1,272,822
Grand total.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,693	.....	1,284,502

MISSIONARY CONVENTION.

Representatives of Organizations of Church Women Meet at Empire.

A missionary convention was held at Empire on Friday afternoon, October 25, with delegates present from each organization of women in the Canal Zone engaged in church work. The ladies' auxiliary of the Empire Christian League, at whose invitation the women convened, had prepared a varied and interesting program, giving liberal space to the methods of missionary work of the different churches, and the delegates listened to the papers and addresses with interest. The chapel was tastefully decorated for the occasion with palms, potted plants, and a profusion of bright flowers.

Mrs. A. A. Nellis, the president of the auxiliary, presided. The spirit of the convention was emphasized by the presence of four women actively engaged in missionary work. These were Mrs. Harry Compton, missionary of the Methodist Episcopal church of Panama, and head of the missionary school of that city; Mrs. Stephen Witt of Gatun, Baptist missionary; Mrs. Sobey, widow of the late Rev. J. H. Sobey, for many years missionary in Costa Rica and Panama; and Miss Annie Coope, a worker among the Indians in South and Central America, and the only missionary who has penetrated the San Blas country. The program, which has already been published in THE CANAL RECORD, included papers on the teaching of missions in the Sunday schools, missionary work in South America, the women's auxiliary of the Episcopal church, an exercise illustrating some of the features of the Hindoo religion, and piano and vocal solos by the young girls of the auxiliary. Mrs. Carl H. Elliott, of the Cristobal Union church led the devotional exercise. Mrs. H. A. A. Smith of Empire welcomed the delegation, and the response was made by Mrs. Fortney of Gatun.

Agreeable to the request from the presiding officer, Mrs. Frederick Mears of Christ Church Women's Guild gave an informal résumé of the program, classified under the title of "The spirit of the convention." General impressions gathered were: The spirit of work for others, the elevation of womanhood by the Christian religion; the opportunities for character building during temporary residence in the Canal Zone; the organization and scientific administration of the missionary work of the women in the Episcopal church; the duty of Sunday school leaders and teachers to teach missions to the young under their charge, the intolerance of the Eastern religion, as brought out in the exercise presented by Mrs. Goolsby, assisted by the Misses Marion Blake, Phyllis Kelly, Juanita Pearson, and Beatrice Catto; and the "Personal" missionary effort possible to all women at home as well as abroad.

Following the program, refreshments were served by the Empire auxiliary.

The interest in the convention was such that plans were spoken of for a second missionary meeting of like character, two, or more, organizations to combine in entertaining.

Religious meetings have been held at different times in the Canal Zone since 1907, but the Empire convention is the first meeting of women's organization of this character.

Friday, November 1, is the fifth annual meeting day of the Women's Guild of St. Luke's Church, Ancón. There will be a service

with corporate communion, and an address by the chaplain in the chapel at 10 a. m., and the annual meeting, with an election of officers, at the residence of Mrs. R. E. Noble, at 3.30 p. m. Regular meetings of the guild will be resumed according to the decision of this meeting.

Canal Zone Pythian Exhibit.

The Canal Zone exhibit at the Pythian Bazaar and States Exposition, held at Baltimore from October 1 to 12, was awarded the first prize for the most interesting display. The prize consists of a set of swords for a lodge altar. The bazaar and exposition was held in the Fifth Regiment Armory, under the auspices of the Grand Lodge of Maryland, with the cooperation of the grand lodges of the different states. Its object was to raise a fund for the erection of a new building in memory of Justus Henry Rathbone, the founder of the order. The Canal Zone exhibit was placed in a large enclosure, occupying one-fourth of the space in the hall, and a lecture, illustrated with stereopticon views, was held in a room set aside for the purpose. Features of the exhibit were: A model of Pedro Miguel Locks, contributed by the Government at Washington, model of Gatun Locks, Dam, and Spillway; relief map of the Canal Zone, the Canal Zone Red Cross, showing work done by the chapter, with views of the Red Cross fire relief camp at Colon, in March, 1911; display of pennants and collection of views, showing the activities of the Canal Zone clubhouses; Canal Zone public schools, specimens of work done by the pupils, models of the equipment course of studies and manual; native hut, full size, with cayuco paddles, tom-toms, pottery, tiger skins, alligator hides, iguana, birds, fiber, fiber bags and beadwork; enlarged photographic views of the cableways and Lidgetwood unloaders at work on the Canal; a display of ivory nuts, with views of the various processes of their manufacture into buttons; specimens of hardwoods and views of hardwood timber lands on the Bayano River; cocoa beans, with the methods of preparing them for the market; and panoramic views of Panama and the Canal Zone. In addition, there were miscellaneous collections of petrified woods, fossil-bearing rock, specimens of stones, earth, shells, and wood taken from the Canal, pearls from Pearl Islands, various books and pamphlets on the Canal and Panama, annual reports, and bound volumes of THE CANAL RECORD. The Canal Zone Pythian exhibition committee was composed of members from each of the eight local lodges, with C. O. Jones, of Gatun, as chairman. Their personal representatives in Baltimore were A. V. Dayton of Cristobal, and J. F. Stevenson of Gatun.

Twenty-four Rodger ballast dump cars have been transferred from the Atlantic Division to the Panama Railroad Company.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, engineers, and chauffeurs will be held by the Board of Local Inspectors at the Administration Building, Ancón, on Wednesday, November 6, 1912. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancón, forms of application, and information respecting the filling out of the same, not later

than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8 a. m., with papers in proper form. In addition, each applicant for chauffeurs' licenses must appear with an automobile and demonstrate ability to operate it.

Ancón Crusher.

The following is a statement of rock crushed at Ancón quarry during the week ending October 19:

DATE.	Hours worked.	Cubic yards.
October 14.....	7.20	2,956
October 15.....	6.55	2,112
October 16.....	7.55	2,858
October 17.....	7.55	2,400
October 18.....	6.55	2,432
October 19.....	7.00	2,109
Total.....	44.00	14,867

Tenpin League Individual Averages.

The individual averages in the Isthmian tenpin league, as of October 12, were, as follows:

Place.	Name.	Team.	Games.	Av.
1	Hodges.....	Gatun.....	6	191
2	Coonly.....	Corozal.....	6	187
3	Gustavson.....	Empire.....	6	181-1
4	Care.....	Culebra.....	6	178-2
5	Swallow.....	Gatun.....	6	175
6	Huson.....	Empire.....	6	171-5
7	Barrett.....	Cristobal.....	5	171-3
8	Lotter.....	Empire.....	6	170-3
9	Rostek.....	Cristobal.....	3	168-1
10	Oettl.....	Gatun.....	6	167
11	Rabbitt.....	Gatun.....	6	166-4
12	Cushing.....	Culebra.....	6	166-4
12	Bullard.....	Cristobal.....	6	165
13	Dougherty.....	Culebra.....	6	164-5
14	Edwards.....	Empire.....	6	164-1
15	Gibson.....	Cristobal.....	3	163
16	Simms, C.....	Gorgona.....	6	160-2
17	Louch.....	Cristobal.....	5	159-4
18	Roper.....	Gorgona.....	6	159
19	Mengel.....	Culebra.....	6	158-1
20	Pinney.....	Empire.....	3	157-1
21	Peterson.....	Corozal.....	6	156-2
22	Burns.....	Cristobal.....	4	155-2
23	Collins.....	Cristobal.....	5	154-1
24	Pearson.....	Empire.....	3	152-1
25	Lowe.....	Gorgona.....	6	151-5
26	King.....	Gorgona.....	6	151
27	Louder.....	Corozal.....	6	149-4
28	Anderson.....	Culebra.....	6	144
29	Brodtt.....	Corozal.....	4	143
30	Dalton.....	Corozal.....	6	141-1
31	Varekamp.....	Gorgona.....	1	140
32	Simms, K.....	Corozal.....	2	138
33	Morrissey.....	Gatun.....	2	129-1
34	McConaughy.....	Gorgona.....	4	128-3
35	Dunlop.....	Gorgona.....	1	115

Tug Service to Porto Bello and Toro Point.

Following is the schedule of Atlantic Division tugs in the service between Dock 13 and Porto Bello, and Dock 13 and Toro Point.

PORTO BELLO.

Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays.—Leave Dock 13 at 5 p. m., arrive Porto Bello 10 p. m., returning, leave Porto Bello 11 p. m., arrive Dock 13 at 3 a. m.

Saturdays.—Leave Dock 13 at 9 a. m., arrive Porto Bello 11 a. m., returning, leave Porto Bello 2 p. m., arrive pier No. 4, Colon, 4 p. m.

Every Saturday, except the first Saturday after the 20th of each month. *Sailing No. 1.*—Leave Dock 13 at 2 p. m., arrive Porto Bello 4 p. m., returning, leave Porto Bello at 4 p. m., arrive at pier No. 4, Colon, 6 p. m. *Sailing No. 2.*—Leave Dock 13 at 6 p. m., arrive Porto Bello 11 p. m., returning, leave Porto Bello 12 midnight, arrive Dock 13 at 4 a. m.

Sundays, immediately following the 20th of each month, ONLY.—Leave Porto Bello 6 a. m., arrive Dock 13 at 8 a. m.

TORO POINT.

Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays. *Sailing No. 1.*—Leave Dock 13 at 6.30 a. m., arrive Toro Point 7 a. m., returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. *Sailing No. 2.*—Leave Dock 13 at 5 p. m., arrive Toro Point 5.30 p. m.

Special, Wednesdays, ONLY.—Leave Dock 13 at 12 noon, arrive Toro Point 12.30 p. m., returning, leave Toro Point 12.30 p. m., arrive Dock 13 at 1 p. m.

Saturdays. *Sailing No. 1.*—Leave Dock 13 at 6.30 a. m., arrive Toro Point 7 a. m., returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. *Sailing No. 2.*—Leave Dock 13 at 4.30 p. m., arrive Toro Point 5 p. m., returning, leave Toro Point 5.30 p. m., arrive Dock 13 at 6 p. m.

Sundays. *Sailing No. 1.*—Leave Dock 13 at 9.30 a. m., arrive Toro Point 10 a. m.; returning, leave Toro Point at 10.30 a. m., arrive Dock 13 at 11 a. m. *Sailing No. 2.*—Leave Dock 13 at 1.30 p. m., arrive Toro Point 5 p. m., returning, leave Toro Point 5 p. m., arrive Dock 13 at 5.30 p. m.

YEAR IN THE CLUBHOUSES.

Gain in Membership and Revenues during Fiscal Year 1911-12.

On June 30, 1912, clubhouses were in operation at the following points: Corozal, Culebra, Empire, Gorgona, Gatun, and Cristobal, in the Canal Zone, and at Porto Bello, 17 miles along the coast.

The gold force consisted of one superintendent, seven secretaries, four assistant secretaries, one clerk, ten night clerks, six bowling alley attendants, six poolroom attendants, and seven barbers.

NEW EQUIPMENT.

During the year, bowling alleys, locker rooms, shower baths, and a barber shop were added to the Corozal clubhouse at a cost of about \$5,000, thereby greatly increasing the efficiency of the work at that point.

MEMBERSHIP.

	1911-12	1910-11
Total membership, end of fiscal year	2,092	1,872
Average monthly membership	1,944	1,947
Largest membership, any given month	2,092	2,121
Smallest membership, for any given month	1,784	1,712

Fifty-eight per cent of the gold employees living in clubhouse towns were members at the end of the fiscal year.

ENTERTAINMENTS.

	1911-12	1910-11
Number of companies engaged from the United States	7	5
Number of entertainments given	85	65
Total attendance	20,865	13,828
Number of entertainments given by local talent and moving pictures	406	277
Total attendance	96,072	56,708

Amateur oratorio societies, operatic troupes, glee clubs, mixed choruses, vaudeville, and black face sketches were organized during the past year through the efforts of the members, cooperating with the secretaries. Many of these organizations appeared at the various towns along the line.

The weekly moving picture exhibitions have become about the most popular form of entertainment in the Canal Zone. A man is employed to give his entire time to these exhibitions. Reels are ordered direct from the United States and a careful selection is made, which includes occasional educational features.

BOWLING, BILLIARDS, AND POOL.

Special tournaments were organized among the clubhouses during the year. Gold, silver, and bronze medals were awarded the winners, and the attendance was large. There were 104,954 games bowled, as against 88,895 for the previous year; 278,739 games of pool and billiards were played, as against 217,710 for the previous year.

PHYSICAL WORK AND ATHLETICS.

Trained physical directors have continued the policy of giving to employees the various forms of exercise most beneficial to their health. There was an attendance of 15,199 at gymnasium classes during the year. A pentathlon meet was held at Empire on February 22, for the purpose of developing all-around athletics. A great deal of interest was developed in the Health League, organized for spreading useful knowledge as to the proper care of the body. The interasso-

ciation basketball and indoor baseball leagues were organized as usual.

RELIGIOUS MEETINGS.

The policy of holding religious meetings and song services, at such times as not to interfere with the organized religious work in the Zone, was continued. The average attendance at 214 meetings was 50, and the average attendance at Bible and discussion clubs was 52.

EDUCATIONAL WORK.

A great deal of interest was manifested in the study of Spanish, classes being held in six clubhouses. The work of the literary and debating societies was of real educational value to the members and a source of pleasure to those whom they entertained. Libraries range from 600 to 1,400 volumes, according to the town, from which 42,195 books were withdrawn for home reading during the year, as compared with 30,857 for the previous year. The reading rooms are supplied with the leading newspapers and periodicals of the day.

REFRESHMENT COUNTERS.

Soft drinks, ice cream, light lunches, etc., are served on the verandas of the clubhouses. The total income from this direction during the past fiscal year was \$49,398.05, as compared with \$36,421.08 for the previous year.

COMMITTEES.

Various committees are appointed from time to time by the secretaries as occasion demands. There are committees on bowling, pool, and billiards, membership, entertainments, etc. Important work was done by the visitations of the sick committee, who made 3,844 calls on hospital patients during the year.

BOYS' DEPARTMENT.

Boys from 10 to 16 years of age are allowed special privileges in the clubhouses. The secretaries endeavor to arrange several outings during the year, and so far as possible guide the activities of the boys into safe and helpful channels. The total membership on June 30, was 146.

FINANCES.

	1911-12.	1910-11.
Disbursements from Commission funds	\$ 50,565.61	\$51,193.90
Disbursements from clubhouse funds	114,732.02	81,510.51
Receipts for the year	118,390.56	91,723.76
Net balance, June 30	16,803.74	11,945.20

The financial management is in the hands of an advisory committee appointed by the Chairman and Chief Engineer, consisting of Mr. H. A. A. Smith, Examiner of Accounts, Mr. Joseph Bucklin Bishop Secretary of the Commission, Major H. A. Brown, Chaplain, U. S. A., and Mr. A. B. Dickson, Superintendent of Clubhouses. The general supervision of each clubhouse is in the hands of an Executive Council appointed by the International Committee of the Y. M. C. A.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Gatun, C. Z., on Sunday, November 3, at 5 p. m. The program follows:

1. March—*Spirit of Independence*.....Holzman
2. Selection—*The Red Widow*.....Gehest
3. Intermezzo—*Indian Summer*.....Moret
4. Overture—*Le Pre aux Clercs*.....Herold
5. Popular song—*Climb a Tree With Me*.....Harris
6. Waltz—*Impassioned Dream*.....Rosas
7. (a).....*Humoresque*.....Dvorak
7. (b).....*La Paloma*.....Vladier
8. Popular medley—*Harris' Hits*.....Clark
9. March—*King of the Air*.....Everlof

CHAS. E. JENNINGS, Musical Director.
The next concert will be given at Corozal, November 10, at 5 p. m.

TABOGA SANITARIUM.

Past Few Months Show Decrease in Number of Patients Admitted.

The number of patients admitted to Taboga Sanitarium for convalescence during the three months, following the close of the fiscal year 1912, was less than the number during any similar period since January 1, 1908. The American occupation of the sanitarium began in September, 1905. From July 1 to October 1, 1912, the daily average number of employees present as free patients was 45.057. The daily average of pay patients during that time was 22. A record of the number of patients received at the sanitarium during the calendar years since 1905, follows:

Year.	Daily average of employees	Number of employees.	Number of non-employees.	Total patients.
*1906		1,271	228	1,499
1907	38.45	2,020	393	2,413
1908	54.26	2,873	711	3,584
1909	59.78	2,706	657	3,363
1910	66.32	3,191	761	3,952
1911	58.92	3,002	723	3,725
†1912	47.39	1,955	914	2,869
Total		17,018	4,387	21,405

*No record for February, 1906.

†January 1 to September 30.

The reduction in the number of free patients has been due to a decrease of cases requiring recuperation at a sanitarium, in conjunction with greater strictness on the part of hospital physicians in interpreting requirements, in the interest of economy.

A spray pump has been furnished the sanitarium for treating with larvacide several spots at which water seeps from the hills above, and it is hoped practically to eliminate mosquitoes from the grounds of the institution. The drainage was effective for the topography, but breeding has been discovered in several puddles of adventitious origin. Among the species of mosquito which the sanitary inspectors have found at Taboga, there has never been an *anopheles*, of which, several subspecies are the secondary hosts in the transmission of malaria. The *stegomyia*, or yellow fever mosquito, is frequent, but there is no record of yellow fever on the island during the American occupation. By far the most usual mosquito at Taboga is the harmless black *culex*, which is found along all seacoasts of tropical and temperate countries.

Copper guards have been placed on the pillars supporting the sanitarium storehouse to prevent the passage of insects and rats. On top of each concrete base, not less than two feet above ground, was placed a pan, made of a rectangular sheet of copper, bent slightly downward in all directions and turned up at the edges, with the joints soldered. The wooden pillars rest on this. The pan extending about a foot on all sides forms a projection over which rats cannot climb, while crude oil around the edges, prevents the passage of insects. The steps of the storehouse were set on a separate base, with a space of several inches between them and the building. Since the adoption of these protective devices no rats or crawling insects have been seen in the storehouse.

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday, and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

PERMANENT PROJECTS.

Description of Future Facilities at Atlantic and Pacific Entrances.

The permanent facilities at the Atlantic and Pacific entrances to the Canal will include the following projects:

PIERS.

The piers for commercial use at Balboa will be built at right angles to the axis of the Canal, with their ends about 2,650 feet from the center line of the Canal channel. They will be about 1,000 feet long, and 200 feet wide, with 300-foot slips between, and with landings for small boats at the head of each slip for the full width between piers. The construction of one pier only will be undertaken at first. The old French steel wharf, about 1,000 feet long, will be retained for some time in the future, for commercial purposes.

Two wharves and one pier are under construction at Cristobal, behind a mole and breakwater, built out from shore toward the Canal channel, and paralleling the boundary line between Canal Zone and Panamanian waters. An article on these docks, including their superstructures and cargo-handling appliances, was published in *THE CANAL RECORD* of October 16, 1912. Primarily, these docks are to meet the commercial requirements of the Panama railroad, but should there be enough traffic after the Canal is completed to justify it, four other piers, each about 1,000 feet long, and 209 feet wide, with 300-foot slips between, will be constructed.

DRYDOCKS.

The main drydock will be situated at Balboa, and will be capable of accommodating any vessel that can pass through the Canal locks. It will have a usable length of 1,000 feet, a depth over the keel blocks of 35 feet at mean sealevel, and an entrance width of 110 feet. The entrance will be closed by miter gates, similar to those used in the locks. The drydock will have a rock foundation, and its sides will be lined with concrete. Its equipment will include a 40-ton locomotive crane, with a travel on both sides.

For vessels of smaller type, an auxiliary drydock will be built at Balboa, in lieu of the marine railways originally contemplated. It will have a usable length of 350 feet, a width at entrance of 71 feet, and a depth over the keel blocks of 13½ feet at mean sealevel. It will be provided with a floating caisson. The 40-ton locomotive crane on the main drydock will be utilized for this dock also. The work of providing space for these drydocks, as well as for the new shops, is now under way, and requires the excavation of about 300,000 cubic yards of material from the northwest face of Sosa Hill. The excavated material is used in filling the site for the shops and terminal yard.

On the Atlantic side, it is proposed to retain the old French drydock at Mount Hope, which has a usable length of 300 feet, a width at entrance of 50 feet, and a depth over the sill of 13 feet at mean sealevel. It was the opinion of the board in charge of the dock projects, that the commercial requirements in sight would not warrant the construction of a drydock at Cristobal capable of accommodating large vessels, in view of the building of a drydock at Balboa, to which any large vessel on the Atlantic side could be taken and returned, in case it was found necessary to dock it for repairs.

COALING PLANTS.

The plans contemplate furnishing vessels

with fuel, fresh water, and supplies of all kinds. The main coaling plant will be situated on the north end of the island, opposite dock No. 11, Cristobal. It will be capable of handling and storing 200,000 tons of coal, with a possible increase of 50 per cent. One hundred thousand tons of the total normal storage is subaqueous. The plant will have railroad connection with the mainland over a bridge of the bascule type, which will cross the French canal at a point about half a mile south of the Mount Hope drydock. The preliminary work on this plant has been begun by the Panama railroad.

A subsidiary coaling plant will be situated at Balboa, at the outer end of the southeast approach wall of the drydock, having a frontage of 500 feet thereon, adapted for discharging vessels. This plant will be capable of handling and storing 100,000 tons of coal, with a possible increase of 50 per cent. Fifty thousand tons of the total normal storage is subaqueous.

FUEL OIL SUPPLY.

In addition to coal, facilities will be provided at Cristobal and Balboa for supplying shipping, and the Canal works, with fuel oil. In line with this plan, four steel tanks of 40,000 barrels capacity each, have been contracted for recently in the United States. A brief description of these tanks was published in *THE CANAL RECORD* of October 9, 1912.

SHOPS.

The main repair shops will be built at Balboa, and are designed to maintain the following equipment:

1. Lock, spillway, and power plant machinery. 2. Water and land equipment retained for the maintenance of the Canal. 3. Rolling stock and equipment of the Panama railroad. 4. Mechanical apparatus connected with the coaling plants, fortifications, cold storage plant, wireless stations, etc. 5. The making of repairs, etc., required by commercial vessels, and by private individuals and corporations. 6. The making of such repairs as may be required by vessels of the United States Navy.

The approximate floor area of the principal shop buildings will be, as follows:

Building.	Area. (Sq. Ft.)
Machine, erecting, and tool shop.....	68,400
Forge shop.....	32,400
Steel storage shed.....	18,080
Boiler and shipfitters' shop.....	46,800
General storehouse.....	96,000
Paint shop.....	12,760
Car shop.....	38,800
Planing mill, carpenter, and pattern shop.....	49,000
Galvanizing shop.....	5,620
Lumber and equipment store shed.....	67,060
Steel, iron, and brass foundry.....	37,600
Coke shed.....	3,070
Boiler house.....	2,500
Pattern storage building.....	14,400
Round house.....	24,000
Office building.....	9,500

Total..... 525,990

In addition to the above, a number of subsidiary buildings will be erected. All of the structures will be of permanent construction, with steel frames. The sides and ends will be left open for ventilation and light, protection from sun and rain being afforded by overhanging sheds.

The main metal working shops, including machine, erecting and tool shops, the forge and pipe shop, and the boiler and shipfitters' shop, together with the shed for the storage of steel, will be placed end on between the drydock and repair wharf. The general storehouse, foundry, woodworking shops, subsidi-

ary buildings, and office building, will be built parallel to the line of the drydock and water front, northeast of the main shops. Two lines of railroad tracks will extend past each end of the main metal working shops, and one track through their center. The main shops will be provided with overhead traveling cranes, the crane runways being extended through each end of the buildings over the railroad tracks. As far as possible, the present machinery will be utilized in the new shops. All of it will be electric driven, including both individual and group drive.

It is proposed to retain the drydock shops, for making repairs on the Atlantic side, until sufficient experience is had to determine the extent and character of repair facilities necessary.

FLOATING EQUIPMENT.

For the handling of the lock gate leaves, as well as for other Canal requirements, and commercial and general wrecking purposes, one, or two, powerful floating cranes will be purchased. For handling vessels of the largest size at Cristobal and Balboa, two high power harbor tugs will be provided, and for the transportation of coal, fuel oil, and fresh water alongside of vessels, a sufficient number of barges and lighters will be placed in service. The steel barges, now in use by the Canal Commission, can be used to good advantage, after the necessary modifications have been made, in the barge and lighter service. A tender for passengers and mail will be furnished at each terminus also, provided the business justifies it.

Canal Zone Rifle Club Shoot.

The second monthly shoot of the Canal Zone Rifle Club for the Garlington medal was held at Pedro Miguel on Sunday, October 27, eleven men contesting. The day was very unfavorable to good shooting, but the scores were five per cent higher in average than at the previous meeting. Mr. Blaisdell of Pedro Miguel won the match, with a score of 85, the best record made so far in this competition.

Qualification shooting at 1,000 yards for the expert course, Class C, War Department course, best out of 50, held on October 13 and 27, resulted, as follows:

Marksman.	Score.
Kennedy.....	43
Blaisdell.....	43
Ferris.....	42
Greene.....	41
Walraven.....	41
Haynes.....	40
John.....	38
Taylor.....	35

The club has qualified to date eight experts, five sharpshooters, and six marksmen, out of a membership of 25.

Obituary.

Walter Frost a citizen of the United States, employed in the Department of Construction and Engineering at Paraisc, died in Ancon Hospital on October 24, after a month's illness. He was 23 years of age, single, and had been on the Isthmus two years, coming here from Venezuela, where he was born. He is survived by his mother, Mrs. Julia Frost, living at Cristobal.

The death of R. E. Bliss, father of Messrs. Gerald and Glen Bliss of Culebra, and Mrs. C. P. Hoffman of Ancon, occurred on October 28, at his home in Sherman, N. Y. Three other children, all daughters, residing in the United States, survive him.

RED CROSS CHRISTMAS SEALS.

A Total of 100,000 for Canal Zone Distribution This Year.



The annual consignment of Red Cross Christmas seals has been received by the Canal Zone Chapter, and the stamps are now on sale. They may be purchased from the offices of the district quarter masters in each village, and at the Commission clubhouses. The National Society was so impressed by the success of the local chapter in the sale of these stamps, last year, when 45,757 were disposed of, that it has increased the allotment to 100,000. To dispose of this number will require hard work by the Red Cross members and the generous cooperation of the public. The stamps sell for one cent each, and the entire proceeds are devoted to the work of carrying on the campaign against tuberculosis. Only 12½ per cent of the proceeds from the sale in the Canal Zone is sent to the National treasury, the balance being used for the benefit of those on the Isthmus suffering from the dread disease. Cases assisted from the former sales are cited, one being that of an American, who left the Isthmus in a serious condition. He is now in a sanitarium, and his condition is greatly improved. Several silver employees have been assisted, including a janitor who has been in the service for many years, and, who, with his family on his hands, was practically destitute.

In 1911, a woman's auxiliary for the sale of these stamps was organized, with Mrs. C. A. Devol, as chairman. Mrs. Devol was assisted by the women's organizations throughout the Canal Zone, and it sold 30,000 stamps. It is proposed to raise this number to 50,000 for the auxiliary department of the Red Cross effort this year. In order that the effort may be successful, it is desired that each organization place an order with the auxiliary chairman at Culebra as early as possible, for as many stamps as can be disposed of. A liberal purchase of these seals is urged, as the major portion of the money received from their sale will be used for Canal Zone relief cases. Communications requesting general information may be addressed to A. B. Dickson, Secretary, Canal Zone Red Cross Culebra, C. Z.

Diplomatic and Consular Corps.

The following corrections should be noted in the list of the Diplomatic and Consular Corps accredited to the Government of the Republic of Panama, published in THE CANAL RECORD of October 16:

CHILE.

Panama—Antonio B. Agacio, Charge d'Affaires and Consul General. Juan Ehrman, Consul.
Colon—Ernesto Jaramillo Aviles, Consul.

Supplies for the Canal.

The following steamers, with supplies from the Isthmian Canal Commission, arrived at the ports of Balboa, Cristobal, and Colon during the week ending October 26:

City of Para, October 19, from San Francisco, with 41 bales dredge sleeves, for Atlantic Division.
Clyde, October 20, from New York, with 188 packages track material, for superintendent of erection.
Timmes, October 20, from New York, with five cases bronze rods for stock; 17 cases electrical material, for superintendent of erection; 22 cases wire, for Mechanical Division.

Allianca, October 21, from New York with 8 cases wire cutters, 10 cases babbitt metal, 250 cases soap

powder, 15 cases rubber hose, 8 bales rubber hose, 67 cases candles, for stock; 529 crates tile slabs, 14,500 hollow brick, for Panama Railroad Company; 7 cases pump machinery, for superintendent of erection; 23 barrels fire brick, one box fire brick, for Atlantic Division; 45 cases sheet copper, for Division of Fortifications; and a miscellaneous cargo, the whole consisting of 15,421 packages, weighing 267 tons.

Zacapa, October 23, from New York, with 6 cases cable hangers, for Panama Railroad Company; 96 cases electrical material, for superintendent of erection.

Abangarez, October 25, from New Orleans, with 150 pieces castings, 40 bundles castings, 290 tons pig iron, 2,588 pieces lumber, for Mechanical Division; 476 bales rice straw, 812 pieces lumber, 185 pieces piling, for stock; 1,600 bags cement plaster, 50 barrels cement plaster for Panama Railroad Company.

The total value of material received during the month of September was \$885,054.85, distributed, as follows:

Mount Hope, (Stock).....	\$360,776.09
Atlantic Division.....	18,334.80
Pacific Division.....	62,333.99
Mechanical Division.....	54,351.34
Sanitary Department.....	7,124.95
Chief Engineer.....	1,335.38
Superintendent of erection.....	252,341.68
Division of Fortifications.....	13,479.71
Panama Railroad Company.....	114,309.26
Total.....	\$885,054.85

The material came forward in 24 steamers, the total weight of cargo, exclusive of lumber and piling, aggregating 14,868 tons. Some of the more important items received were, as follows: 764,592 feet B. M. yellow pine lumber, 77,937 feet B. M. white oak lumber, 168,628 barrels cement, 30,000 cases dynamite, 3,046 pieces piling, 1,040 tons steel bars, 700 tons lock machinery, 280 tons structural steel, 450 tons steel for emergency dams, 430 drums oils, 550 cases oils, 2,151 bars ingot copper, 1,451 bags oats, 245 pieces steel pipe.

Rainfall from October 1 to 26, 1912, Inclusive.

STATIONS.	Maximum in one day.	Total for period.	Date.
<i>Pacific Section—</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>
Ancon.....	3.40	12	12.39
Balboa.....	5.83	12	13.06
*Miraflores.....	2.22	22	11.27
Pedro Miguel.....	1.78	26	8.96
Rio Grande.....	1.76	26	7.44
<i>Central Section—</i>			
Culebra.....	2.02	26	8.46
*Camacho.....	1.51	26	8.37
Empire.....	2.18	20	10.17
Gambao.....	2.07	20	11.49
*Juan Mina.....	2.00	19	10.00
Alhajuela.....	1.96	14	9.72
*El Vigia.....	2.10	21	10.39
*Gorgona.....	2.05	7	11.19
*Frijoles.....	3.36	7	15.12
*Monte Lirio.....	2.10	16	13.96
<i>Atlantic Section—</i>			
Gatun.....	2.04	7	11.88
*Brazos Brook.....	2.35	21	12.69
Colon.....	2.26	20	12.75
Porto Bello.....	2.98	15	14.01

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., October 25.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, October 26, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigla.	Alhajuela	Gambao.	Gatun Lake
Sun., October 20.....	132.0	96.8	52.4	50.2
Mon., October 21.....	131.1	96.4	53.2	50.8
Tues., October 22.....	130.4	95.8	53.0	51.4
Wed., October 23.....	130.3	95.8	53.0	51.8
Thurs., October 24.....	127.9	94.0	52.4	52.0
Fri., October 25.....	127.2	93.5	52.4	52.2
Sat., October 26.....	130.7	96.0	53.2	52.4
Height of low water to nearest foot.....	125.0	91.0	44.0	

OFFICIAL CIRCULARS.

Chief Accountant, Central Division.

EMPIRE, C. Z., October 21, 1912.

CENTRAL DIVISION CIRCULAR No. 339:

Effective this date, Mr. R. K. Booth is appointed chief accountant, Central Division, vice Mr. W. M. McCoy, resigned.

D. D. GAILLARD, Division Engineer.

Discontinuance of Pay Certificate Car.

EMPIRE, C. Z., October 21, 1912.

CENTRAL DIVISION CIRCULAR No. 340:

Effective with the November pay period, the Central Division pay certificate car, which is now run with the pay train, will be discontinued. It will be necessary, therefore, for Central Division employees to secure their pay certificates from the different timekeeping offices, from the men sent out from such offices to deliver pay certificates on the work, or from the different yard offices.

D. D. GAILLARD, Division Engineer.

Assistant Chief of Police and Prisons.

DEPARTMENT OF CIVIL ADMINISTRATION.

DIVISION OF POLICE AND PRISONS.

ANCON, C. Z., October 15, 1912.

GENERAL ORDER No. 1773:

Inspector Andrew G. Belknap, Zone police, is, with the approval of the Head of Department of Civil Administration, appointed assistant chief of Division of Police and Prisons, effective October 15, 1912.

He will be obeyed and respected accordingly.

C. W. BARBER,

Chief of Division of Police and Prisons.

Sailing of Steamships "Advance" and "Ancon."

TO HEADS OF DEPARTMENTS AND DIVISIONS:

On account of necessary repairs, the steamship *Advance* will be unable to leave New York, as per published schedule, on October 26, and the date of sailing is not known at this time.

The steamship *Ancon* will leave New York on October 28, and will sail from Cristobal on or about November 10.

Information is desired from those employees who have engaged passage for themselves or families on the steamship *Advance*, scheduled to sail from Cristobal on November 7, whether they wish their reservations changed to the *Ancon*, sailing about November 10.

By direction of the Chairman,

C. L. McILVAINE, Chief Clerk.

Misdirected Letters.

ANCON, C. Z., October 30, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts and may be secured upon request of the addressee:

Agard, Joseph	Martinez, Anselmo
Balling, Geo. A.	Meise, Mrs. G.
Baysen, Fred	Mitche, Mrs. Earle O.
Beresford, Mrs. George	Noel, Shulby
Boyle, Edward	Pratt, Alexander
Butler, W. H. & Co.	Quinn, Patrick J.
Charters, Andrew (2)	Keed, Hugh
Collett, Wilbur	Roach, Hugh
Curenon, John R.	Schoel, Freddie
Cureton, J. E.	Shelton, Wm. H.
Davis, Harry	Smith, Miss Cronnaleen
Dias, E. C.	Snapp, B. M.
Fyte, A. M.	Solomon, A. M. (photo)
Garcia, G.	Stransky, Frank
Gooding, William	Terry, Charles
Hall, Mrs. Wells H.	Trout, C. L.
Harmis, Nevin O.	Vickery, Wm. J.
Howe, Herbert G.	Water, Urban
Hutchinson, John	Walther, Louis
Johnson, Miss Mabel	Winneld, Jeff (2)
Jones, Arthur A.	

Married.

KITTS-HAWLEY—On September 10, at Fond du Lac, Wisconsin, Alberta Waldo Hawley to Joseph Arthur Kitts. Canal Zone residence, Gatun.

HUBBARD-PLIMPTON—On October 27, Florence Mattie Plimpton of Somerville, Mass., to Dr. Wallace Eugene Hubbard of Boston, in the Union Church at Cristobal. Rev. Carl H. Elliott, officiating. Canal Zone residence, Ancon.

GILBERT-DAKIN—On Saturday, October 26, at St. Luke's Hospital chapel, Ancon, the Rev. H. A. Brown officiating, Miss Bessie H. Dakin to Mr. Park Gilbert. Canal Zone residence, Empire.

Lost—Either in Panama, or at the Tivoli, two hotel books and two commissary books, charged to James Welsh and C. B. Briggs. Finder will please notify C. B. Briggs, Gatun, C. Z.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The moving picture schedule for the week of November 4 to 9 will be, as follows: Monday, Gatun; Tuesday, Empire; Wednesday, Gorgona; Thursday, Cristobal; Friday, Culebra; Saturday, Corozal.

The annual all-Isthmian tenpin tournament will be held at Gatun, on Monday, November 4. Representatives from all the clubhouses in the Zone will compete. Gold and silver medals will be given as prizes. The public is cordially invited to witness the tournament.

Employees are invited to spend election night at the clubhouses. Special programs have been prepared, and election returns will be thrown on a screen. Considerable rivalry is manifested among the members of the various local political parties, and the mock elections promise to be closely contested.

The standing of the basketball league on October 28, was, as follows:

Team.	Won.	Lost.	P. C.
Corozal.....	3	0	1.000
Empire.....	2	0	1.000
Gorgona.....	1	2	.333
Gatun.....	0	2	.000
Cristobal.....	0	2	.000

The standing of the teams in the bowling tournament on October 28 was, as follows:

Team.	Won.	Lost.	P. C.
Gatun.....	8	4	.666
Cristobal.....	7	5	.583
Empire.....	7	5	.583
Culebra.....	6	6	.500
Gorgona.....	4	8	.333
Corozal.....	4	8	.333

COROZAL.

Saturday night, November 2, Gorgona will play basketball with Corozal on the latter's floor.

The results of the Gatun-Corozal game on Saturday, October 26, were: Corozal 25, Gatun 12. The teams were lined up, as follows:

Corozal.	Position.	Gatun.
Wright.....	Forward	Fitzpatrick
Roberts.....	Forward	Whiston
Chadbourne.....	Center	Neely
Porter.....	Guard	Huber
Morris.....	Guard	Conley

The Empire bowlers won two out of three games from Corozal, on the local alleys, on Saturday night, October 26. Corozal bowls at Gatun Saturday night, November 2.

The Spanish class received its first regular lesson on Friday night. Eighteen men have joined to date.

"Open house" will be held on the night of Hallowe'en, Thursday, October 31. There will be a program and refreshments.

CULEBRA.

A convention of the "Married Progressive party" was held on October 23. Mr. Don Beaman was chosen chairman. The following candidates for the mock municipal election were chosen: Alcalde, Gerald D. Bliss; watch dog of the treasury, E. W. Palmer; dog catcher, E. E. Hayes; district judge, C. A. McIlvaine; superintendent of schools, Mrs. A. B. Dickson; poor food inspector, H. C. Smith; water commissioner, Wm H. Bolan; city engineer, F. G. Clark; chief of police, F. T. Dougherty; prosecuting attorney, Bernard Beckerlgge; overseer of the poor, N. W. Pronger; board of aldermen, W. J. Connelly, Mrs. J. M. Hepler, Mrs. D. H. Beaman; board of councilmen, Frank R.

Woodman, G. A. Jones, D. E. Hill and G. R. Ramsey. The platform was read and adopted.

The convention of the Independent Party was held on Monday night, October 28.

A torch light procession will be held on Friday night, November 1, headed by a band. A rally will follow, at which speeches will be made by the candidates. All are invited.

A program is being arranged for Tuesday night, November 5, to be held in the second story of the schoolhouse. A special telephone wire will be installed for the purpose of receiving election returns, special moving pictures have been arranged for, and a mock election will be held for both presidential and municipal officers. Other features will be added, and refreshments will be served. Everybody in Culebra is invited to attend.

In the match game of bowling on Saturday evening, October 26, Gatun won two out of three games with the local men.

EMPIRE.

On Saturday, November 2, Empire will play at Gatun.

During the past week, the four leading political parties of Empire have organized and at a joint ratification meeting, held Tuesday night, October 29, the parties presented their platforms and candidates. The election will take place on Tuesday, November 5. Polls will be open from 7 a. m. to 8 p. m. at the Empire clubhouse. Ladies are invited to take part in the election.

The boys' outing for Saturday, November 2, will be to the Las Cascadas plantation.

The basketball game between Empire and Gorgona, played at Empire, on Saturday, October 26, was won by Empire. Score: Empire 21, Gorgona 16. The lineup was, as follows:

Gorgona.		Empire.
Sterns.....	right forward	Rowan
Londes.....	left forward	King and Sawyer
Christenson.....	center	Hepler
Carpenter.....	right guard	Greening
Helly.....	left guard	Miller

GORGONA.

On Monday night, October 21, a big political rally was held at which all candidates for the mock election were introduced.

There was a big political parade of all parties on the night of the 29th. The Tenth Infantry band furnished music.

A Hallowe'en social will be held on Thursday evening, October 31. Everybody is invited.

GATUN.

On Monday evening, October 21, representatives of the various political parties met at the clubhouse and organized a general committee of arrangements to conduct a political campaign and election in Gatun, under the auspices of the Y. M. C. A. On Tuesday evening, October 22, the Republican and Progressive parties, held their national and city conventions. On Wednesday evening, October 23, the Democratic party held its convention. The Socialists' convention was held on the evening of October 28. The election will be held on November 5. The following nominations have been made for mayor of Gatun: Republican, Maj. Geo. M. Hoffman; Democratic, W. B. Childers; Progressive, Dr. F. G. Farmer; Socialist, Geo. A. Barte.

The following men have entered the pocket billiard tournament for which gold and silver medals will be given as prizes: Messrs. Dewey, Wurster, Miller, Cheeks, Bailey, Coleman, Courter, Quinn, Eggleston,

Bellringer, Townsley, Kerruish, Meise, Dennis, Gamble, Myers, Betha, Luckey.

The Sunshine Society will give a Hallowe'en social at the clubhouse on Thursday evening, October 31.

On October 27, the membership of the Gatun Y. M. C. A. reached the high water mark of 435. A campaign for 500 members is under consideration.

A cordial invitation is extended to all those who find it inconvenient to attend the evening gymnasium classes, to join the class which meets twice a week at 5.20 p. m.

CRISTOBAL.

On Saturday night, the local bowlers took two out of three games from the Gorgona team by the following scores:

Gorgona.			Cristobal.		
King.....	126	156 155	Barrett.....	139	170 130
Shires.....	103.		Strong.....	146	143 175
Arnold.....		140 182	Collins.....	153	160 158
Sims.....	170	210 169	Bullard.....	194	189 186
Stoehr.....	149	143 171	Louch.....	151	158 163
Roper.....	154	169 199			

Total... 702 818 876 783 820 812

During the week ending October 26, the following high scores were made on the local alleys:

Duckpins—Burn, W., 105, 105, 101; Weston, 109; Bullard, 105; Herrington, 105; Smith, 102; Bell, 106; Marquez, 102, 102, 111; Barrett, 106; Landers, 112; C. Cotton, 100; and Mrs. W. Burn, 106. *Tenpins*—Collins, 204, 201, 208; Barrett, 214; Peterson, 207. *Candlepins*—Landers, 123.

On Monday night, October 21, the monthly "Married Folks" duckpin tournament was held, with the following results:

Team.	1	2	3	Total.
1. Mr. and Mrs. W. Burn.....	149	171	191	511
2. Mr. and Mrs. Bell.....	168	176	158	502
3. Mr. and Mrs. Burrell.....	165	165	155	485
4. Mr. and Mrs. Weston.....	162	143	169	474
5. Mr. and Mrs. Cotton.....	168	149	156	473
6. Mr. and Mrs. Landers.....	158	153	151	462
7. Mr. and Mrs. Bullard.....	126	169	150	445

The next "Married Folks" tournament will be held on November 21, when the first and second prizes will be Thanksgiving turkeys.

On Monday night, a nominating convention was held to nominate officers for the local election which will be held on Tuesday, November 5, in connection with a straw ballot on the National tickets. All white Americans over 18 years of age, will be eligible to vote. Hours for balloting will be from 6 p. m. to 10 p. m. Ladies from 6 to 8 p. m. The two local parties running candidates are the I. C. C. and P. R. R. Nonmembers and members are welcome to vote and hear the returns from the United States.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending November 6, 1912, (75th meridian time):

DATE.	High	Low	High	Low	High
	A. M.	A. M.	A. M.	P. M.	P. M.
October 31.....	12.40	6.38	1.10	7.13	
November 1.....	1.31	7.29	2.02	8.10	
November 2.....	2.32	8.30	3.05	9.15	
November 3.....	3.45	9.45	4.16	10.32	
November 4.....	5.01	11.00	5.32	11.48	
		P. M.			
November 5.....	6.12	12.25	6.38		
November 6.....	12.53	7.13	1.28	7.37	

PANAMA RAILROAD COMPANY.

PANAMA-BALBOA LABOR TRAIN SCHEDULE—IN EFFECT 5 A.M., OCTOBER 21, 1912.

Supplement No. 2 to current Time Table No. 12.

SOUTHWARD.									STATIONS.	NORTHWARD.											
Work nights only.		Daily except Sund'y		DAILY.						DAILY.								Daily except Sund'y	Work nights only.		
67	65	63	61	59	57	55	53	51		50	52	54	56	58	60	62	64	66	68		
P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	A. M.	A. M.	Leave. Panama Big Tree Commissary Big Tree Balboa	Arrive.	A. M.	A. M.	A. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.
10.50	7.30	5.35	1.50	12.30	10.30	7.45	6.35	5.25			5.35	6.20	7.30	10.05	11.25	1.25	5.20	6.30	8.35	11.30	
.....	7.35	5.40	1.55	12.35	10.35	7.50	6.40	5.30			.....	6.15	.....	.....	.....	.....	.....	6.25	.....	.....
.....	.....	5.45	.....	.....	.....	.....	.....	5.35			.....	6.10	.....	.....	.....	.....	.....	6.20	.....	.....
.....	.....	5.50	.....	.....	.....	.....	.....	5.40			.....	6.05	7.20	9.55	11.15	1.15	5.10	6.15	.....	.....
11.05	7.45	5.55	2.05	12.45	10.45	8.00	6.50	5.45			5.15	6.00	7.15	9.50	11.10	1.10	5.05	6.10	8.20	11.15	
P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	A. M.	A. M.	Arrive.	Leave.	A. M.	A. M.	A. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.
67	65	63	61	59	57	55	53	51			50	52	54	56	58	60	62	64	66	68	

Note—Trains 65 and 66 daily, except Sunday. Trains 67 and 68 only on nights Balboa Docks work. Nos. 50 and 51 meet on double track between Big Tree and Wye Switch, 51 to be given preference.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning November 1, 1912:

FRESH MEATS.	Price.
Mutton—Stewing per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire forequarter (not trimmed, 10 pounds and over), per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Leg (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	16
Chops, per pound.....	24
Loin for roasting, per pound.....	24
Cutlets, per pound.....	28
Pork—Loin chops or roast, per pound.....	18
Beef—Suet, per pound.....	5
Soup, per pound.....	5
Stew, per pound.....	8
Plate, per pound.....	9
Corned, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Chuck roast (3 pounds and over), per pound.....	12
Pot roast, per pound.....	15
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds), per pound.....	18
Sirloin roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, chuck, per pound.....	12½
Round, per pound.....	13
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds), per pound.....	20
Tenderloin (Western), per pound.....	23
Venison (Imported), Stew, per pound.....	6
Forequarter (not under 6½ pounds), per pound.....	9
Rack (not under 5½ pounds), per pound.....	20
Saddle (not under 7½ lbs.), per pound.....	20
Leg (not under 9 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24

MISCELLANEOUS.

Pate de Foie Gras, jar.....	55
Livers—Beef, per pound.....	11
Calf, each.....	60
Half, each.....	30
Steak Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	11
Frankfurter, per pound.....	12
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	10
Sweetbreads—Beef, per pound.....	30
Eggs, fresh, dozen.....	35
one-half dozen only.....	18
Bluefish, per pound.....	15
Halibut, fresh, per pound.....	15
Salmon, fresh, per pound.....	22
Fluke, fresh, per pound.....	10
Oysters, quarts, per keg.....	50
Shads, fresh, each.....	50
Roes, shad, pair.....	25

POULTRY AND GAME.

Chickens—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds each.....	1.25
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00
Fowls, each.....	1.00
Ducks, (Western, about 4½ pounds,) each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	35
Capons, each.....	2.10
Ducks, blackhead, pair.....	60
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants, per pair.....	1.30

CURED AND PICKLED MEATS.

Ham—German, Westphalia, per pound.....	36
Sugar cured, per pound.....	20
Sliced, per pound.....	21
Half, for boiling, per pound.....	22
Boiled, per pound.....	28
Hocks, per pound.....	28
Beef, salt family, per pound.....	12

Bacon—Breakfast, whole piece, per pound.....	25
sliced, per pound.....	26
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00
Pigs' feet, per pound.....	9
Tongues, per pound.....	18

DAIRY PRODUCTS.

Butter—Creamery, special, per pound.....	39
Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	45
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Parmesan, per pound.....	35
Edam, tin.....	26
Gouda, per pound.....	10
Milk (Certified), per bottle.....	**20
Butter, bottle.....	**15
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	225
½ gallon.....	250

VEGETABLES AND FRUITS.

Beets, per pound.....	4
Celery, per head.....	5
Cabbage, per pound.....	4
Cucumbers, per pound.....	5
Carrots, per pound.....	4
Lettuce, per pound.....	15
Onions, per pound.....	3½
Potatoes, white, per pound.....	3½
sweet, per pound.....	3
Peppers, green, per pound.....	5
Romaine, per pound.....	10
Squash, per pound.....	3
Turnips, per pound.....	3
Tomatoes, per pound.....	5
Yams, per pound.....	3
Apples, per pound.....	4
Grape fruit, each.....	4
Lemons, dozen.....	24
Limes, per 100.....	80
Plums, per pound.....	11
Pears, per pound.....	8
Oranges, Jamaica, per dozen.....	12
Pineapples, each.....	12½

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

††Fowls weigh each about, as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock next lightest weight is supplied and refund note sent for difference.

?Sold only from commissaries; no orders taken for delivery.

Sale of Y. M. C. A. Piano.

OFFICE OF THE CHIEF QUARTERMASTER.

CULEBRA, C. Z., October 28, 1912.

Sealed proposals will be received at this office until 3 p. m. Wednesday, November 6, 1912, and then opened, for the purchase of a piano now at the Y. M. C. A. at Goreona. Piano can be inspected at the Y. M. C. A. at Goreona. Envelopes containing proposals should be marked "Proposal for purchase of piano" and addressed to Col. C. A. DEVOL, Chief Quartermaster, Culebra, Canal Zone. The Government reserves the right to accept or reject any or all bids.

C. A. DEVOL, Chief Quartermaster.

Sale of Public Buildings.

OFFICE OF THE CHIEF QUARTERMASTER.

CULEBRA, C. Z., October 28, 1912.

Sealed proposals will be received at this office until 3 p. m. Saturday November 2, 1912, and then opened, for the purchase of the following Isthmian Canal Commission buildings: Old French laborers' barracks Nos. 174 and 175 at Chagres Camp. Proposals must be accompanied by certified check, post-office money order, or cash for five per centum (5%) of amount bid. Envelopes containing proposals should be marked "Proposals for purchase of buildings," and addressed to Col. C. A. DEVOL, Chief Quartermaster, Culebra, Canal Zone. Buildings must be removed within thirty (30) days from date of sale. Successful bidders will be granted the Commission freight rate over the Panama railroad on material recovered from these buildings. The Government reserves the right to accept or reject any or all bids. For further information apply to District Quartermaster, Las Cascadas, Canal Zone.

C. A. DEVOL, Chief Quartermaster.

Sale of Surveying Instruments, Compasses, and Ship's Log.

OFFICE OF DEPOT QUARTERMASTER.

MOUNT HOPE, C. Z., October 21, 1912.

Sealed bids will be received at the office of the Depot Quartermaster, Mount Hope, C. Z., until 2 p. m., November 9, 1912, when they will be opened in the presence of attending bidders, for any and all surveying instruments, compasses, and ship's log now on hand in the storehouse for obsolete material. These instruments may be seen on any working day between the hours of 7 to 11 a. m., and 1 to 5 p. m., on application to this office. The right is reserved to reject any or all bids or any combination of bids. Bids must be sealed and plainly marked: "Proposal to purchase Surveying Instruments," and addressed to the Depot Quartermaster, Mount Hope, C. Z.

CHARLES L. PARKER,
Acting Depot Quartermaster.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Ancon.....	P. R. R., Monday.....	Oct. 28
Panama.....	P. R. R., Saturday.....	Nov. 2
Allianca.....	P. R. R., Friday.....	Nov. 8
Colon.....	P. R. R., Thursday.....	Nov. 14
Advance.....	P. R. R., Wednesday.....	Nov. 20
Panama.....	P. R. R., Tuesday.....	Nov. 26
Allianca.....	P. R. R., Tuesday.....	Dec. 3
Colon.....	P. R. R., Monday.....	Dec. 9
Advance.....	P. R. R., Saturday.....	Dec. 14
Panama.....	P. R. R., Friday.....	Dec. 20
Allianca.....	P. R. R., Friday.....	Dec. 27

CRISTOBAL TO NEW YORK.

Colon.....	P. R. R., Saturday.....	Nov. 2
Panama.....	P. R. R., Thursday.....	Nov. 14
Allianca.....	P. R. R., Wednesday.....	Nov. 20
Colon.....	P. R. R., Tuesday.....	Nov. 26
Advance.....	P. R. R., Monday.....	Dec. 2
Panama.....	P. R. R., Sunday.....	Dec. 8
Allianca.....	P. R. R., Sunday.....	Dec. 15
Colon.....	P. R. R., Saturday.....	Dec. 21
Advance.....	P. R. R., Thursday.....	Dec. 26
Panama.....	P. R. R., Thursday.....	Jan. 2
Allianca.....	P. R. R., Wednesday.....	Jan. 8

NEW YORK TO COLON.

Orotava.....	R. M., Saturday.....	Oct. 26
Prinz Eitel Friedrich.....	H. A., Saturday.....	Oct. 26
Carillo.....	U. F. C., Saturday.....	Oct. 26
Santa Marta.....	U. F. C., Wednesday.....	Oct. 30
Prinz August Wilhelm.....	H. A., Saturday.....	Nov. 2
Turrialba.....	U. F. C., Saturday.....	Nov. 2
Metapan.....	U. F. C., Wednesday.....	Nov. 6
Thames.....	R. M., Saturday.....	Nov. 9
Tivies.....	U. F. C., Saturday.....	Nov. 9
Prinz Sigismund.....	H. A., Saturday.....	Nov. 9
Zacapa.....	U. F. C., Wednesday.....	Nov. 13

COLON TO NEW YORK.

Zacapa.....	U. F. C., Thursday.....	Oct. 31
Prinz Joachim.....	H. A., Monday.....	Nov. 4
Sixola.....	U. F. C., Thursday.....	Nov. 5
Almirante.....	U. F. C., Thursday.....	Nov. 7
Prinz Eitel Friedrich.....	H. A., Monday.....	Nov. 11
Carrillo.....	U. F. C., Tuesday.....	Nov. 12
Trent.....	R. M., Tuesday.....	Nov. 12
Santa Marta.....	U. F. C., Thursday.....	Nov. 14
Prinz August Wilhelm.....	H. A., Tuesday.....	Nov. 19
Turrialba.....	U. F. C., Tuesday.....	Nov. 19
Metapan.....	U. F. C., Thursday.....	Nov. 21

NEW ORLEANS TO COLON.

Atenas.....	U. F. C., Saturday.....	Oct. 26
Heredia.....	U. F. C., Wednesday.....	Oct. 30
Parishina.....	U. F. C., Saturday.....	Nov. 2
Abangarez.....	U. F. C., Saturday.....	Nov. 9
Heredia.....	U. F. C., Wednesday.....	Nov. 13
Atenas.....	U. F. C., Saturday.....	Nov. 16
Cartago.....	U. F. C., Wednesday.....	Nov. 20

COLON TO NEW ORLEANS.

Abangarez.....	U. F. C., Thursday.....	Oct. 31
Cartago.....	U. F. C., Thursday.....	Oct. 31
Atenas.....	U. F. C., Thursday.....	Nov. 7
Heredia.....	U. F. C., Thursday.....	Nov. 7
Parishina.....	U. F. C., Thursday.....	Nov. 14

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 4 p. m.

Royal Mail steamers for New York on alternate Tuesdays, at 2 p. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston, and Santiago de Cuba, at 2 p. m., on sailing dates.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m. for Limon, via Bocas del Toro, on Tuesdays at 5 p. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending October 26:

Arrivals—October 21, *U. S. S. Colorado*, from Nicaragua; October 21, *Pachitea*, from Callao; October 24, *Guatemala*, from Guayaquil; October 23, *Palena* from Valparaiso; October 25, *Tricolor*, from San Francisco.

Departures—October 21, *Quito*, to Guayaquil and intermediate ports; October 21, *Mantaro*, to Callao; October 21, *Chile* to Guayaquil; October 22, *Peru* to Guayaquil; October 25, *Manari*, to Buena-ventura and intermediate ports; October 25, *U. S. S. Colorado*, to Nicaragua.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, NOVEMBER 6, 1912.

No. 11.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication, or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Bound Volumes of "The Canal Record."

A limited number of bound copies of Volume 5 of THE CANAL RECORD will soon be ready for distribution for official purposes. These volumes will be marked *For Official Use Only—Property of the I. C. C.* Heads of departments are requested to advise the Secretary of the Commission at Ancon of the number of these volumes that they will require for use in their departments, citing the names of the persons to whom they should be issued.

Conclusion of Hydraulic Operations in Pacific Division.

Hydraulic excavation in the Pacific Division will be completed about December 1, 1912, when the plant will be shut down and dismantled. For some time past operations have been in the Canal channel, south of Miraflores Locks, and have about reached the point where the cost of excavating by this method would probably exceed the cost by steamshovels. A good bottom has been obtained for shovel work on the east side of the channel below the dam, and from there the shovels will be in position to make favorable progress.

Excavation by the hydraulic method was begun in September, 1910, and the equipment was first used in filling the core of the west dam at Miraflores, the monitors at that time working in the lower lock site at Miraflores. The hydraulic fill of the dam was completed on December 4, 1911, and amounted to 625,048 cubic yards. Prior to this time, the zone of operations had been moved further south into the channel section, and, when the fill of the dam was completed, the material disintegrated by the monitors and pumped out by the dredge pumps was carried to the nearby tidal swamps. A total of about 110 acres of swamp land had been reclaimed to November 1, 1912. The total excavation accomplished by the hydraulic plant from the beginning of operations to November 1, 1912, aggregates 1,723,800 cubic yards. During the

fiscal year ending June 30, 1912, the total cost of handling the material, earth and rock, by the hydraulic method, was \$0.5564 a cubic yard.

Trestle on Naos Island Dike Completed.

On Wednesday, November 6, the last piles were driven in the trestle for the Naos Island dike, connecting Naos Island with the mainland at East Balboa. On that date, about one-half mile of trestle remained to be filled.

The dike is being constructed by the Central Division, and is primarily for the purpose of shutting off the swift current, which at flood tide, flows across the Canal channel in Panama Bay, nearly at right angles, and not only causes heavy deposits of silt, but also tends to carry vessels out of the channel westwardly. It will also be used to furnish rail connection between the islands and the mainland, thereby obviating the present necessity of transferring material to barge or lighter at Balboa. In addition, it will be wide enough throughout its length for a wagon road.

The dike, when completed, will be 3.29 miles long. In its construction, a pile trestle is first driven from which spoil from Culebra Cut is dumped. When the trestle is filled, the tracks are shifted laterally, and the dike widened and used as a dump. For the greater part of its length, the trestle is driven in blue mud, which feels greasy to the touch, and is composed of exceedingly fine particles. The work of extending the dike during the past two years has been attended with considerable difficulty, due to the weight of the stone filling dumped from the trestle. This sliding has been encountered on every foot of the last two years' work, and results in continual settlement of the stone filling for two or three months, when it gradually diminishes until it stops altogether.

The total vertical settlement in one section of the dike during the period from July 1, 1911 to June 30, 1912, aggregated 125 feet. Not one foot of trestle constructed during the past two years remains at present under the track for which it was intended, parts of the trestle sliding to one side, and parts to the other, in some cases moving laterally as much as 300 feet. The elevation of the top of the trestle is 14 feet above mean tide, and the average depth of water for the last mile of trestle constructed is about 15 feet at mean tide, giving a total height of trestle of about 29 feet above the original bottom.

When the rock filling is dumped, it begins to settle as soon as it attains a height of a few feet, pushing up from the bottom a parallel ridge of mud on each side of the trestle. By the time the rock fill has been completed to its full height, the center of each of these parallel ridges of mud is about 80 feet from the center of the track. Each of these ridges is separated from the ridge of stone filling, which caused

their upthrust, by a hollow of from 10 to 15 feet in width, the bottom of which has remained practically undisturbed, showing that the settlement of the stone filling and upthrust of the mud bottom take place on opposite sides of a nodal line and involve considerable underground lateral motion.

The settlement almost invariably takes place at or just before low water, and is usually greatest at time of extreme low water of spring tides, owing to the fact that at such times the total pressure on the base of the mound of riprap filling is much greater than at high tide. At extreme high water, only about four feet of the dike, and that the narrowest portion, is above water, whereas at extreme low water, 24 feet of the total height of the dike lie above the water level.

In one section of the work, an accurate record was kept of the quantity of stone necessary to bring the fill up to the full height, namely, 29 feet above the original bottom, and it was found that the actual quantity of stone required was about 10 times the theoretical quantity had the bottom been solid and unyielding. Although the amount of stone filling required has been greatly in excess of the original estimate, yet owing to the quantity of material available for the work, the cost as a whole has been moderate, when compared with other ocean works of a similar character, built on a better bottom. The total cost of the dike up to June 30, 1912, was \$186,396.79, or about \$13 a lineal foot.

Excavation and Lock Masonry Costs.

Excavation in the Canal prism by steamshovels during the fiscal year ending June 30, 1912, was cheapest in the Central Division, averaging \$0.5101 per cubic yard. In the Atlantic Division the cost was \$0.5952 a cubic yard, as compared with \$0.6010 during the previous year; and in the Pacific Division \$0.7527, against \$0.6960 for the fiscal year 1910-11.

In dredging, the costs were higher than for the previous year, and for channel excavation, the Pacific Division showed lower than the Atlantic Division. The Pacific Division did not include any arbitrary for plant, the total cost of which was absorbed previously, but in its territory, increase in depth is attended with additional expense, because of the great tidal variations.

There was a total of 1,443,570 cubic yards of masonry laid in the locks and spillways during 1911-12, as compared with 1,741,908 cubic yards the preceding year. The unit costs for this work were: Gatun Locks, \$7.7552 a cubic yard; Gatun Spillway, \$7.0988; Pedro Miguel Lock, \$6.4640; Miraflores Locks, \$4.7675. With a decrease in quantity laid in Gatun Locks of 512,315 cubic yards, the cost of plain concrete showed an increase of \$0.5398 a cubic yard, as compared with the previous year. At Pedro Miguel, with a decrease in the amount laid of 363,609 cubic

(Continued)

PERSONAL.

CONCRETE WORK IN THE LOCKS.

GATUN LOCKS.

	<div>CONSTRUCTION PLANT. 2-cubic yard mixers.</div>			<div>AUXILIARY PLANT. 2-cubic yard mixers.</div>			<div>Large stone.</div>	Total.
DATE	Concrete placed	Hours worked	No. of mixers	Concrete placed	Hours worked	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
October 28	60	1.00	2	.	.	.	.	60
" " 29	168	2.80	2	.	.	.	.	168
" " 30	254	4.24	2	.	.	.	.	254
" " 31	194	3.24	2	.	.	.	.	194
November 1	86	1.44	2	.	.	.	.	86
November 2	40	.66	2	.	.	.	.	40
Total	802	13.38	2	.	.	.	.	802
Previously reported . . . . .				.	.	.	.	1,901,138
Grand total . . . . .				.	.	.	.	1,901,940

PEDRO MIGUEL LOCK.

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2 cubic yard mixers.			½-cubic yard mixer.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
	<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>
October 28..	342			32.00	4		19		361
October 29..	379			34.25	4		21		400
October 30..	285			27.50	4		15		300
October 31..	254			26.00	4		16		270
November 1..	346			35.00	4		18		364
November 2..	107			12.00	3		8		115
Total				1,713	166.75	3 83	97		1,810
Previously reported.								4,493	884,526
Grand total								4,493	886,336

MIRAFLORES LOCKS.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.									Mixed by hand.	Large stone.	Total.
				2-cubic yard mixers.			1-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
	<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>
October 28.....	1,450	27.50	8				267	16.00	2	206	25.00	4	36		1,959
October 29.....	1,060	25.83	8				318	15.00	2	276	32.00	4	8		1,662
October 30.....	1,260	31.83	8				278	16.00	2	256	29.50	4			1,794
October 31.....	1,406	33.00	8				225	12.50	2	203	32.00	4	24		1,950
November 1.....	1,124	29.50	8				278	16.00	2	310	34.00	4	10		1,722
November 2.....	546	16.00	8				141	8.00		147	17.00	4			834
Total.....	6,846	163.66	8				1,507	83.50	2	1,490	169.50	4	78		9,921
Previously reported.....													3,693		1,284,502
Grand total.....													3,693		1,294,423

PANAMA WATER SUPPLY.

High Pressure Afforded by New Main—Removal of Filters from Miraflores.

When the 20-inch main from the Rio Grande reservoir was placed in service in August, there was an immediate increase in pressure in the pipes throughout Ancon and Panama. Before the main was connected, the water pressure in Panama ranged between 10 and 25 pounds; it occasionally went as high as 40 pounds, but the average was about 15. Since the new main was placed in service, the pressure has seldom gone below 30 pounds, and from midnight until morning it goes as high as 70 pounds. With the additional force superinduced by the high pressure reservoir on Ancon Hill, which is connected with the Panama mains at every alarm of fire, the pressure in Panama recently went as high as 108 pounds. Calculating on a 2-foot throw from the hose nozzle for each pound of pressure in the pipes, the supply to Panama at present is considered ample for fire protection. It is better than it had been at any time since the inauguration of the water service on July 4, 1905.

The additional pressure has resulted in increased water consumption. In the month of June, 1912, the consumption of water in Panama amounted to about 39,000,000 gallons. In August, following the inauguration of the 20-inch main, the quantity consumed aggregated approximately 53,000,000 gallons; in November it was about 49,000,000 gallons. This increase of from ten to twelve million gallons a month is attributed mostly to the increased pressure in the mains.

Since the new main was put in service, the pumping plant at Miraflores, supplying water from Cocoli Lake, auxiliary to the Rio Grande supply, has been closed down. It had been supplying the main to Ancon and Panama, through a 10-inch pipe, with 71 per cent of the water supplied by the Rio Grande main. During the fiscal year ending June 30, 1912, Cocoli Reservoir furnished 871,045,000 gallons of water and Rio Grande Reservoir supplied 1,184,681,370 gallons. The surface of Cocoli Reservoir is normally at 43 feet above sealevel, and it will ultimately be inundated by Miraflores Lake, which will rise to elevation plus 55 feet. Cocoli Lake was formed by the waters of the Cocoli River, backing up against the west dam at Miraflores, and was not originally intended for a reservoir, but was used when the supply from the Rio Grande became inadequate.

The Cocoli pumping plant was equipped with two 3-stage, centrifugal pumps, each with a capacity of 1,500 gallons a minute against a head of 300 feet, driven by 200-horsepower, 3-phase, 25-cycle motors. The plant will ultimately be abolished, but its disposition has not been decided on at present. It was put in temporary service for a short time after its closing down, in order to supply high pressure water to a monitor for excavating on the site of the Miraflores spillway.

The closing of the plant placed the two filters, each of a capacity of 500,000 gallons per day, out of service, and it has been decided to install them in the filtration plant at Ancon. Those at the latter plant have a rated capacity of 1,500,000 gallons a day, but during the past two months the daily average amount of water passed through them was 2,234,500 gallons, or about 50 per cent in excess of their

rated capacity. This made it necessary to wash the filters three times a day, and, in addition, the alum did not have time to become thoroughly mixed with the water and form the precipitates which are necessary to eliminate the bacteria and suspended particles from the effluent. When the filters from Miraflores are installed at Ancon the total rated capacity will be 2,500,000 gallons a day. One will be put within the present building, and the other under an adjacent shed.

A committee, consisting of Messrs. T. L. Clear, chairman, M. E. Gilmore, W. J. Spalding, Ad. Faure and W. N. Windes, has been appointed to determine the basis for charges to be made against the Republic of Panama on account of the installation of the new Rio Grande main, the auxiliary pumping plant at Mindi, and the projected Colon waterworks. The first meeting of the committee was held on November 6.

An Omission.

The name of Col. W. C. Gorgas was inadvertently omitted from the list of members of the advisory committee of the Zone Clubhouses in the general article on clubhouses, published in the CANAL RECORD of October 30, 1912.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending October 26:

DATE.	Hours worked.	Cubic yards.
October 21.....	6.45	2,515
October 22.....	7.10	2,420
October 23.....	7.10	2,448
October 24.....	7.20	2,474
October 25.....	8.20	2,899
October 26.....	6.40	1,538
Total.....	43.25	14,294

United Spanish War Veterans.

Chagres Camp, No. 1, U. S. W. V., will hold its regular meeting in the I. C. C. lodge hall at Empire on Sunday, November 10, at 3 p. m.

Tug Service to Porto Bello and Toro Point.

Following is the schedule of Atlantic Division tugs in the service between Dock 13 and Porto Bello, and Dock 13 and Toro Point:

PORTO BELLO.

Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays—Leave Dock 13 at 5 p. m., arrive Porto Bello 10 p. m., returning, leave Porto Bello 11 p. m., arrive Dock 13 at 3 a. m.

Saturdays—Leave Dock 13 at 9 a. m., arrive Porto Bello 11 a. m., returning, leave Porto Bello 2 p. m., arrive pier No. 4, Colon, 4 p. m.

Every Saturday, except the first Saturday after the 20th of each month. Sailing No. 1—Leave Dock 13 at 2 p. m., arrive Porto Bello 4 p. m., returning, leave Porto Bello at 4 p. m., arrive at pier No. 4, Colon, 6 p. m. *Sailing No. 2*—Leave Dock 13 at 6 p. m., arrive Porto Bello 11 p. m., returning, leave Porto Bello 12 midnight, arrive Dock 13 at 4 a. m.

Sundays, immediately following the 20th of each month, ONLY—Leave Porto Bello 6 a. m., arrive Dock 13 at 8 a. m.

TORO POINT.

Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays. Sailing No. 1—Leave Dock 13 at 6.30 a. m., arrive Toro Point 7 a. m., returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. *Sailing No. 2*—Leave Dock 13 at 5 p. m., arrive Toro Point 5.30 p. m.

Special. Wednesdays, ONLY—Leave Dock 13 at 12 noon, arrive Toro Point 12.30 p. m., returning, leave Toro Point 12.30 p. m., arrive Dock 13 at 1 p. m.

Saturdays. Sailing No. 1—Leave Dock 13 at 6.30 a. m., arrive Toro Point 7 a. m., returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. *Sailing No. 2*—Leave Dock 13 at 4.30 p. m., arrive Toro Point 5 p. m., returning, leave Toro Point 5.30 p. m., arrive Dock 13 at 6 p. m.

Sundays. Sailing No. 1—Leave Dock 13 at 9.30 a. m., arrive Toro Point 10 a. m.; returning, leave Toro Point at 10.30 a. m., arrive Dock 13 at 11 a. m. *Sailing No. 2*—Leave Dock 13 at 4.30 p. m., arrive Toro Point 5 p. m., returning, leave Toro Point 5 p. m., arrive Dock 13 at 5.30 p. m.

A PROCLAMATION

By the President of the United States of America
—Panama-Pacific International Exposition.

Whereas, in conformity with the conditions and requirements of the joint resolution of Congress approved February 15, 1911, "Authorizing the President to invite foreign countries to participate in the Panama-Pacific International Exposition in 1915, at San Francisco, California," satisfactory proof has been presented to me that a suitable site has been selected for the said exposition and that the sum of not less than fifteen million dollars will be available to enable the Panama-Pacific International Exposition Company, a corporation organized and existing under and by virtue of the laws of the State of California, for the purpose of inaugurating, carrying forward, and holding an exposition at the city of San Francisco, California, in the year 1915, to celebrate the completion and opening of the Panama Canal;

Now, therefore, I, William Howard Taft, President of the United States of America, by virtue of the authority vested in me by said joint resolution, do hereby declare and proclaim that such International Exposition will be opened in the year 1915, in the city of San Francisco, in the State of California. And, in the name of the Government and of the people of the United States of America, I do hereby invite all the nations of the earth to take part in the commemoration of an event of great interest and importance to the world by appointing representatives to the Panama-Pacific International Exposition and sending thereto such exhibits as will most fitly and fully illustrate their resources, their industries, and their progress in civilization.

In testimony whereof I have hereunto set my hand and caused the seal of the United States to be affixed.

Done at the city of Washington this second day of February, in the year of our [SEAL.] Lord, 1912, and of the Independence of the United States of America the one hundred and thirty-sixth.

WM. H. TAFT.

By the President:

P. C. KNOX,
Secretary of State.

[No. 1178.]

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 92 per cent completed, 207,753 cubic yards, out of a total of 225,000, having been placed at the close of work on November 2. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete laid.	Hours worked.	No. mixers used.
	Cu. Yds.		
October 28.....	60	8.00	1
October 29.....	52	6.75	1
October 30.....	72	8.00	1
October 31.....	72	7.75	1
November 1.....	28	2.67	1
November 2.....	28	2.75	1
Total.....	312	35.92	1
Previously reported...	207,441		
Grand total.....	207,753		

LOST—In Empire, October 26, black sealskin watch fob, and gold bowling medal inscribed "Gorgona, Canal Zone." Finder please return to F. G. Swanson, Gorgona.

GEOLOGY OF CULEBRA CUT.

Nature and Conduct of Slides Explained by Commission Geologist.

According to the report of the Commission geologist, the slides are attributable to two general causes:

(a) A primal cause, the weak and unstable geological condition of the rocks through which the Cut passes, attributable only to nature; and:

(b) The oversteepness and height of the slopes, the blasting, and other work attributable only to man.

In the main, the weakness, and, therefore, the sliding tendency of the rocks is due to peculiar local geological conditions. The presence of fossil oysters, corals, gastropods, and remains of other marine animals in the sedimentary rocks found at intervals across the Isthmus, is evidence that the Atlantic and Pacific oceans were in connection over the present land barrier during Tertiary time. During that period, islands of older rocks, like the present islands of Panama Bay, showed at intervals above the shallow ocean which existed where the Isthmian land now stands.

These oldest rocks consist of (a) recrystallized conglomerates and breccias, as found at Bas Obispo, and, locally, near the Pacific. These are overlain by (b) agglomerate lava flows and tuffs, as between Empire Bridge and Las Cascadas. The next younger rocks, (c) are the light colored tuffs of Pedro Miguel, Miraflores, Diablo Ridge, and the lower slopes of Ancon Hill. Later than these are (d) the dark, soft shales and marly clays found from one-fourth mile south of Empire Bridge to the Miraflores locks. Probably, equivalent to these dark shales are the argillites and argillaceous sandstones of Lion Hill, Gatun, Mount Hope, etc. The upper part of the Gatun formation seems to be equivalent to the Bohio conglomerates. Deposited later than (d) are the greenish volcanic clays, unstratified in character, and with red oxidized beds representing land conditions of deposition. This formation contains lava flows; also, lignitic shale beds, showing fossil ferns, and other vegetation, which is confirmatory evidence that while they were being formed above sealevel, swamp conditions prevailed locally. The youngest series of bedded rocks (e) have a basal bed of coral limestone, overlying which, are yellowish weathering consolidated clays, a bed of limy conglomerate, and the youngest beds of limy argillite. All of the Isthmian sedimentary rocks are cut by intrusions of basic lava, mostly basalt, and by plugs of meta-breccia, pushed up cold by some of the lava intrusions. The lavas and breccias are strong, but most of the sedimentary rocks of Culebra Cut are uncrystallized, loosely cemented, sheared, and cut by fissures and faults, so they are very weak and unstable. Through their interstices and joint and fault planes, they absorb a large amount of the heavy tropical rains, which further weakens them, and which increases their tendency to deform and slide.

There are four distinct types of slide, classified by the geologist, as follows:

- (a) Structural breaks and deformations resulting in slides.
 - (b) Normal or gravity slides.
 - (c) Fault zone slides.
 - (d) Weathering and surface erosion.
- The structural break and deformation slides are the most troublesome and most

important. Their first manifestations are cracks or fissures, approximately parallel to the side of the Cut, and from a few to a hundred yards, or more, back from it, and from each other. Each fissure is usually traceable on the surface for several hundred yards, and each gradually widens with time. The next stage of this type of slide is the tilting of the large blocks, toward the Canal, usually accompanied by upward bulging of the bottom of the Cut, opposite the moving block. For a few weeks, or even for a year, or more, this tilting, settling, and bulging may continue before the real slide comes. This last stage consists in the collapse of the basal part of a moving block, due to the pressure of its upper part, and to the weakening effects of the deforming and shearing movement that it has undergone. When this stage is reached, the block rapidly disintegrates, and, in a few hours, or a few days, it becomes a gravity slide of mud and rock debris piling up at the bottom of the Cut.

The causes of this type of slide are the weakness of the rocks, and the height and steepness of the slopes. These conditions induce deformation, or almost imperceptible flow movement of the high banks toward the excavation, with consequent cracking and shearing of the slope material, and bulging at the bottom of the Cut, all of which tends to further weaken the rocks until finally they collapse.

Normal, or gravity slides, occur where the Cut intersects beds of porous material lying on top of relatively impervious clay, shale beds, or dense lava masses. Water sinking freely through the upper bed is retarded in its descent by the impervious material, and thus causes a muddy, slippery zone to form along the contact between the pervious upper and impervious lower layers. If the latter dip toward the Canal, or if there is much lateral pressure from higher ground, the material above the zone of contact is almost sure to slide. The Cucaracha and Paraiso slides are of this type, but like most slides of this kind, they are now practically dead. This type of slide, it is predicted, will not, from now on, in the progress of the work, be of relatively large size or importance.

The fault zone slides are occasioned primarily by sheared and weakened zones in the rocks, due to fault displacements. Where fault planes are intersected by the plane of the Canal slope, large masses of rock in the acute angle between the two planes generally fall out into the excavation; or where the fault plane dips, the overhanging rocks—"hanging wall" of the plane—often crush down into the excavation. The most notable fault zone slides are the La Pita slide, and that about 600 feet north of La Pita, which, on August 20, 1912, in a few minutes, let down about 300,000 cubic yards of material and carried away a hundred yards of the East Diversion.

The heavy tropical rains erode and trench the slopes and wash the weathered surface material into the Cut. Weathering and disintegration of most of the rocks of Culebra Cut is very rapid, because the iron and magnesia compounds, which they contain, are readily oxidized on exposure to the atmosphere. The new oxides formed take up more room than the old product, and the change of volume thus brought about causes the rock to crumble and fall to pieces. These rocks also contain some soluble limy cementing material, which, when leached out by surface waters, helps along the disintegrating

process. The loose surface product, which results from this rapid weathering, is swept from the slopes by the heavy tropical rains, and thus fresh surfaces are left exposed for further weathering action. Of course, the material washed into the Cut in this way has no perceptible hindrance on present excavation; still, the geologist estimates that it would add about 65,000 cubic yards per year to the sediment accumulating in the bottom of the Canal. At 25 cents per cubic yard for removal by dredging, this would swell the upkeep charges by \$16,250 per year. Slopes that are clothed with a carpet of vegetation are relatively free from erosion, hence tropical vegetation will be encouraged to cover the slopes of the Canal with its abundant growth, that washing by tropical rains may be minimized.

The geologist believes that the rock conditions along the Canal will limit the slides within certain fairly definite bounds, and that when the slopes have been reduced to the proper angle, the slide problem will be practically solved. This angle will vary from almost perpendicular in the case of the strong lavas, to one on five for the weaker rocks, or even one on ten in a few extreme cases, where deformation and faulting have been pronounced. Almost the only remedy of practical importance in the slide problem is to lessen the weight of the high, weak slopes from the top, so as to reduce the tendency to slide, and to prevent, if possible, breaks and deforming movements. Slopes which have not moved will stand at a much steeper angle than those of the same material, which have been sheared, cracked, and bulged by deforming movements. The geologist points out in his report that the first estimate for the excavation of Culebra Cut designed slopes that were much too steep for the weak nature of most of the material through which the Canal was to be excavated, but, that though slides of considerable magnitude are yet to occur, the sliding period will eventually be brought to a close, and that the ultimate completion and successful operation of the Canal cannot possibly be in any danger from slides.

Sale of Red Cross Seals in 1911.

Statistics of the sale of Red Cross seals for 1911, showing in detail the results obtained by 85 agents in different parts of the country, have been compiled, and are published on Page 27 of the *Red Cross Bulletin* for October, 1912. The total number of seals sold aggregated 33,425,759.

Comparisons show that the Canal Zone society led all other societies in the percentage of allotment sold. The standing of a few of the leading agencies is given below:

AGENCY.	Seals sold 1911.	P. C. of allotment sold	Gain over 1910.
Canal Zone.....	43,571	80	37,401
Wilmington, N. C.....	63,317	79	13,615
Stamford, Ct.....	22,731	74	12,731
Norfolk, Va.....	147,400	73	32,400
Washington, D. C.....	277,292	73	21,792

Last year the Canal Zone allotment was 50,000. This year the national society has increased the allotment to 100,000.

Of the above number, the ladies' auxiliary, under Mrs. Devol, has taken a block of 30,000, and W. F. Bennyhoff of Cristobal has already sold 7,000.

Appeal is made to all Americans to support this work liberally.

PROTECTION FROM FLOODING.

Dike at Gamboa Strengthened, Because of Rise of Gatun Lake.

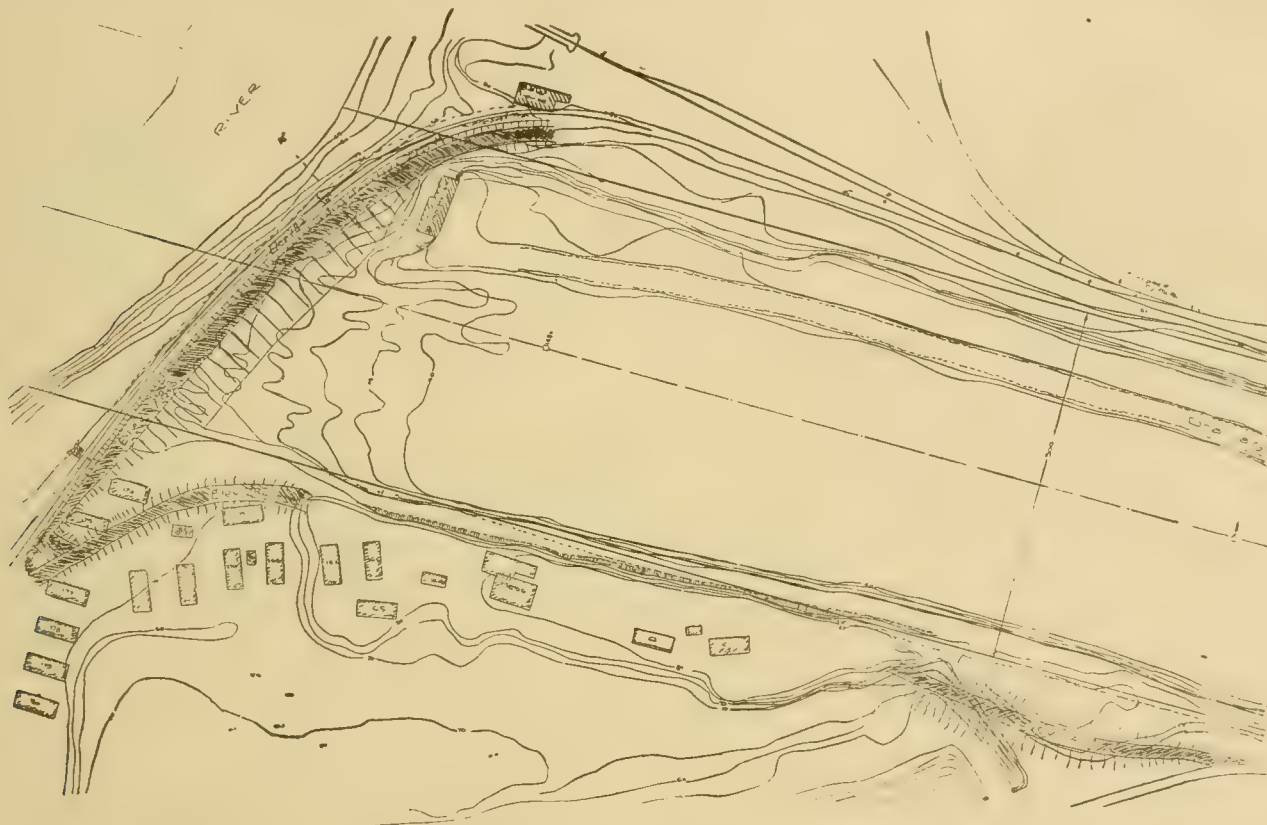
The rise of Gatun Lake has caused the waters of the Chagres River to back up as far as Palo Grande, about three miles above the point at which the river reaches the line of the Canal, and to rise correspondingly against the dike which protects Culebra Cut, at its north end, against flooding. The bottom of the finished portion of the Cut is 39 feet above

of the river, in order to avoid the imminent break and washing.

The present problem affecting the dike at Gamboa is the influence of the backwater, under local geographical conditions, in the event of floods. So far, it has seemed to have very little influence toward checking the moderate rises which have occurred since the closing of the Spillway gates. The amount of rises at Gamboa has been about 70 per cent of the rise at Vigia, the uppermost station on the river.

north of the dike intersects a loop of the river, an island was formed between the two points of intersection. At high water, the island would be practically in the middle of the river, and its effect in causing backflows and eddies against the dike is a matter of speculation.

The situation relative to the dike is further complicated by the narrowness of the river's passage below Gorgona. Opposite the site of the former village at Mamei, and again at San Pablo, the Canal and river merge into one channel 1,000 feet wide, between high banks.



SKETCH A—GAMBOA DIKE, SHOWING ITS RELATION TO THE CANAL PRISM AND CHAGRES RIVER.

sealevel; the normal low water level of the Chagres at Gamboa dike was at elevation 44, but since the closing of the sluice gates in the Spillway dam at Gatun, the surface of the water has risen as high as elevation 55.6. This is 16.3 feet above the bottom of the completed channel, and 17.4 feet below the top of the dike, as it has stood for several years.

In consequence of this rise and the uncertainty of the influence of the backwater during probable floods of the river, the dike is being raised about five feet and widened an average of about 50 feet by dumping clay on the side toward the Cut. Its new elevation of plus 78.2 will afford a leeway of approximately 22½ feet during floods for rises. Records have not been kept of the river stages at the dike, but the heights there are considered as two feet lower than at the Gamboa river gaging station, three-fourths mile up-stream. Only once during the American occupation has the river been higher than 78.2 feet at the station. This was in December, 1906, when the crest of a flood reached 81.6 feet. The flood of November 19, 1909, rose to 72.6 feet at the station. It came so close to the top of the dike, which was then at 71 feet above sealevel, that sluice gates were opened to fill the Cut with water to the level

This is approximately the same ratio which has been observed for several years.

Between Gamboa gaging station and the dike, the river channel is as narrow as 800 feet, with high, steep banks. It is possible that a heavy flow, jamming here on the backwater, would result in a high rise locally.

Below San Pablo is the wide expanse of lake. The problem is the behavior of flood water before it reaches the lake proper. The sluice gates in the Spillway of Gatun Dam are capable of letting out double the rate of normal rainy season flow from tributaries to the lake, but as the lake could not be lowered more



SKETCH B—AVERAGE CROSS SECTION, SHOWING ADDITION TO PRESENT DIKE AT GAMBOA.

Opposite the dike, the completed Canal channel leading to the north affords additional outlet for the Chagres, but since the river crosses the Canal at an angle of about 60 degrees, the abruptness of the turn makes a factor of uncertainty. As the Canal directly

than a foot in 24 hours, opening the sluice gates would have slight effect on a sudden river flood. The crest of a rise normally reaches Gamboa about five hours after it has passed Vigia, from which it is reported by telephone to the hydrographic office.

A typical cross section of the dike, with the addition, is shown in the accompanying sketch B. Sketch A is a map of the vicinity, showing the north end of Culebra Cut, the dike as extended, and the immediate channel of the Chagres River. In addition to the main dike across the Canal, reinforcement has been made by dumping at places on the west side, at which, the elevation of the ground was less than 78.2 feet above sealevel. The track of the Panama railroad, crossing the Canal on top of the original dike, will not be disturbed. About 800 feet south of the Gamboa dike

is a similar barrier, which has protected the Cut from flooding through the old channel of the diverted Obispo River, the valley of which is crossed and generally followed by the northern half of the Cut. This dike has also been raised and strengthened. Inasmuch as the diversion channel empties into the Obispo channel at this point, and almost at right angles, the dike has been ripped with rock on the water side, to protect it from the torrents which flow from the diversion after heavy rains. The dikes, as reinforced, are indicated by the shaded portions of the map.

SOCIAL LIFE OF THE ZONE.

Organizations in Ancon.

The Ancon Study Club has continued the study of Shakespeare's plays, and will follow the course with a study of the modern American drama. A special program will be given at the meeting on Friday, November 8, which will be held at the home of Mrs. White, Tivoli Hill. The work of the library has been steadily increasing, the issuance of books to nonmembers during the past month having increased over that of any previous month since the organization of the club.

A bridge club was organized in Ancon on November 2. The organization is limited to 16 persons, and is composed of six married couples and four young members of Ancon families. The club will meet at the homes of members on Saturday evenings.

The Camp Fire Girls Movement.

The Camp Fire Girls movement in the Canal Zone was started in August, 1912, by the organization in Gatun of a camp fire, composed of nine girls, under the guardianship of Mrs. William L. Sibert. The meetings of the Gatun camp fire are held at the home of the guardian on Monday afternoons. They are of informal character, and in favorable weather, the afternoon is spent in playing outdoor games, with light refreshments at the close of the meeting. Once a month the council fire, or ceremonial meeting, is held, at which time, the girls wear the ceremonial dress of khaki with bead decorations, including such honor beads as have been won by the performance of certain specific duties, in accordance with the rules of the camp fire. The work of the camp fire is divided into seven divisions, health craft, home craft, nature lore (woodcraft), camp craft, handcraft, and patriotism. A feature of the organization is the gymnasium class, which meets at the Commission clubhouse on Saturday afternoons, working under the instruction of the physical director of the clubhouse. This department has been enlarged to admit a limited number of nonmembers.

At Gorgona, the movement was started about two months ago, and while the local camp has not been organized, a gymnasium class of 20 has been started. The class meets at the clubhouse on Saturday evenings, working under the direction of the physical director. This class includes the junior girls, and a number of young married women, but will be limited to 25.

A number of friends gave a dinner at the Hotel Washington, on Wednesday evening, October 30, to Mr. Geo. H. Ruggles, on the eve of his departure for the United States. Among those present were: M. E. Gilmore,

Dan Wright, J. J. Reidy, M. Lavery, W. J. Owen, Chas. Wright, and Alfred Schaff, all six year men.

Mock Elections in the Canal Zone.

In the Canal Zone villages at which Commission clubhouses are located, mock campaigns were held by the Americans during a few weeks preceding November 5. Inasmuch as citizens of Panama are the only residents in the Canal Zone who have the suffrage, the elections by Americans are of interest chiefly as manifestations of political desire for expression on the part of those temporarily disfranchised.

The basis of election was in most cases municipal, though the parties and issues, so-called and loosely defined, were in many cases curiously mixed with those of the recent national campaign in the United States. In Cristobal, a preliminary meeting of all Americans decided to separate into the Isthmian Canal Commission and Panama railroad parties. An insurgent element at the meeting demanded recognition as a third party, and gained it after riotous demonstrations and expressions on the rights of man. In Culebra, the division was complicated by the long-standing rivalry between married men and bachelors, the latter claiming to be the only possible independent and progressive element. At Gorgona, Empire and Gatun, the lines of cleavage were set by national politics, though the campaigning was almost wholly with regard to municipal offices.

The tickets usually bore nominations for mayor, aldermen, town clerk, and the other leading officials in the average organization of an American town. Interspersed among these were nominees for dog catcher and, in one village, for the nonpolitical position of "Town grouch."

Platforms dealt almost entirely with local conditions, except for borrowed rhetoric expended on the issues in the United States. In only a few instances were there expressions of sincere political thought, such as demands for better lighting and for weekday privileges at the Commission clubhouses on Sundays. The Commission hotels and the commissary stores afforded material for many reform planks, nearly all of which were expressions of crude humor. While generalizations demanded political and social equality and industrial freedom, there were practically no protests against the so-called paternalism of the Canal Zone government, and the privileges afforded officials. The Panama railroad was denounced as a "Monopolistic corporation," apparently for the progressive ring of the words, as no practical reform of rates was suggested. A number of whimsical, yet desirable social reforms were suggested,

such as a hall of music on a remote hill for the use of amateurs.

Campaigning consisted principally of displays of cartoons and announcements on bulletins and billboards, the flying of streamers, and processions with torches, transparencies, and bands. Rallies were held in the evenings, at which speeches were made by candidates and other partisans. From the playful nature of the proceedings, no serious discussions were expected, or tolerated for long; heckling and sharp retorts made the substance of most orations.

The results of the balloting are of slight consequence; the officials chosen will have no powers, duties or emoluments of office, and the memory of the campaigns will abide only as that of a prolonged and strenuous social event. But as a celebration of political customs and a pleasurable exercise of practices liable to atrophy, the mock elections are the most distinctly American celebrations which Canal Zone residents can enjoy. There is no event more reminiscent of home.

Results at Cristobal Mock Election.

The candidates on the "Bull Moose" ticket were elected in the mock election, held at the Cristobal clubhouse on Tuesday evening for the residents of Cristobal and Colon Beach. The official results were, as follows:

NATIONAL TICKET.

Republican—William Howard Taft, 33; James S. Sherman, 23.

Democratic—Woodrow Wilson, 200; Thomas R. Marshall, 178.

Progressive—Theodore Roosevelt, 224; Hiram Johnson, 194.

Socialist—Eugene V. Debs, 26; Emil Seidel, 24.

Socialist Labor—Reimer, 5; Gillhaus, 5.

Prohibition—E. W. Chafin, 1.

LOCAL TICKET.

P. R. R. Party—Ross Wallace, 135; R. H. Wardlaw, 148; "Bill" Dawson, 151; A. K. Stone, 181; John Burke, 141; Lieut. F. Mears, 150; C. J. Snapp, 121; P. T. Murphy, 146; W. H. Kromer, 129.

I. C. C. Party—Col. Eugene T. Wilson, 133; W. E. Burrell, 108; W. T. Harrison, 102; J. W. Barrett, 115; Max Lehman, 98; Miss Elizabeth McCormack, 149; Jim Daley, 116; Dr. Claude Pierce, 122.

"Bull Moose" Party—J. A. Smith, 273; H. B. Furlong, 261; R. R. Watson, 269; J. A. Linville, 250; D. W. McCormack, 253; T. M. Jordan, 269; C. M. Bullard, 248; Joe Lawrence, 251; A. S. Chambers, 259.

The vote for or against woman suffrage, state and national, stood 204 for, and 75 against.

Pacific Division Sand Service.

A report of sand cars loaded and shipped from Balboa during the month of October, follows:

DESTINATION.	Number cars.	Cubic yards.
Pacific Division.....	1,960	35,596
Atlantic Division.....	8	190
Central Division.....	26	390
Mechanical Division.....	1	25
Quartermaster's Department.....	2	50
Civil Administration.....	1	25
Fortifications.....	249	*5,863
First Division.....	21	347
Lighthouse Division.....	2	46
Panama railroad.....	7	175
Department of Sanitation.....	1	25
Panama Tramways Company.....	5	115
Miscellaneous.....	8	200
Total.....	2,291	43,047

*Includes two barge loads.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The standing of the teams in the Isthmian tenpin league on November 4 was, as follows:

Team.	Won.	Lost.	P. C.
Cristobal.....	10	5	.666
Empire.....	10	5	.666
Gatun.....	10	5	.666
Culebra.....	6	9	.400
Corozal.....	5	10	.333
Gorgona.....	4	11	.266

The standing of the teams in the basketball league on November 4 was, as follows:

Team.	Won.	Lost.	P. C.
Corozal.....	4	0	1.000
Empire.....	3	0	1.000
Gorgona.....	1	3	.250
Gatun.....	0	3	.000
Cristobal.....	0	2	.000

COROZAL.

The local handicap pool tournament will close on Saturday night, November 9.

The Corozal basketball five won the game with Gorgona on the Corozal floor, Saturday, November 2. Score, 17 to 14. The Corozal team will play at Empire on Saturday, November 9.

The Spanish class has an average attendance of 18. Three hundred people were at the Hallowe'en entertainment on Thursday evening, October 31. The program consisted of moving pictures, illustrated songs by G. K. Weston, violin solo by W. W. Wright, piano accompaniment by Miss Penman, ocarina solo by E. E. Tanner, reading by Ralph Wilson, vocal solo by Mrs. A. P. Boyd. Refreshments were served.

CULEBRA.

The next moving picture exhibition will be held on Saturday night, November 9. It is desired to call attention to the fact that members are admitted free of charge to these entertainments, but to adults who are not members, a fee of 25 cents is charged, and to all children a fee of 15 cents.

Mr. Benj. A. Armstrong has been appointed secretary at the Culebra clubhouse.

EMPIRE.

Two Isthmian bowling tournament games were bowled on the Empire alleys on Saturday night, November 2, between Gorgona and Empire; and Cristobal and Culebra, with the following results:

Empire.....	825	839	863
Gorgona.....	816	828	826
Cristobal.....	791	794	886
Culebra.....	755	738	823

The prize offered for the highest score in tenpins during October was won by Mr. Edwards. Score, 232.

The four classes in Spanish continue to attract the members, the average attendance being 25.

The recent billiard tournament was won by Mr. Fullman, after a spirited contest with Mr. Wood. There were twelve entries in this tournament, and the interest was such that another tournament will be started at once.

The Empire clubhouse has invited the other clubhouses to join the Empire association in an invitation tenpin tournament to be held on Thanksgiving Day.

According to the last census report, 71 per cent of the gold employes residing in Empire were members of the Empire Y. M. C. A.

GATUN.

The record for membership receipts at the Gatun clubhouse for a single month was broken in October,

when the total amount received in cash and deduction slips was \$627.

"Open house" was observed at the clubhouse on Monday, November 4. Pool and billiards were played without charge. Moving pictures were shown in the evening.

Gatun won the first and third, and Corozal, the second game of bowling in a match held on Saturday evening, November 2. The scores were, as follows:

Gatun.	Corozal.
Swallow.....	166 192 173
O'Meara.....	154 145 170
Rabbitt.....	136 137 152
Barte.....	180 160 153
Ootli.....	151 122 192
Peterson.....	156 151 138
Dalton.....	171 166 124
Ziller.....	151 151 134
Souder.....	142 163 135
Coonly.....	154 144 141

Total..... 787 756 840 774 775 672

Empire defeated Gatun in a very interesting game of basketball on Saturday evening, November 2. Scores: Empire, 33; Gatun, 19. Referee, Sartor; umpire, Oskin; timer, Fomon.

Red Cross stamps are on sale at the office of the secretary.

A beginners' class in Spanish, for ladies, was started on Tuesday afternoon, November 5.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, November 2, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigia.	Alhajuela.	Gamboa.	Gatun Lake.
Sun., Oct. 27.....	130.5	96.0	53.9	52.8
Mon., Oct. 28.....	129.6	95.2	54.0	53.1
Tue., Oct. 29.....	128.9	95.0	54.0	53.4
Wed., Oct. 30.....	130.3	95.6	54.0	53.7
Thurs., Oct. 31.....	130.8	96.0	55.4	54.3
Fri., Nov. 1.....	129.6	95.2	55.4	54.5
Sat., Nov. 2.....	129.6	95.2	55.4	54.0
Height of low water to nearest foot.....	125.0	91.0	44.0	

October Rainfall for Three Years.

STATIONS.	1910	1911	1912	Station Av.	Years of record	Rainy days 1912
<i>Pacific Section—</i>						
Ancon.....	8.86	10.90	17.89	10.92	16	23
Balboa.....	9.98	8.47	15.75	9.55	14	21
Miraflores.....	13.40	9.71	15.44	12.99	5	28
Pedro Miguel.....	13.42	12.92	10.48	12.54	5	25
Rio Grande.....	14.72	16.65	9.46	13.10	8	24
<i>Central Section—</i>						
Culebra.....	13.51	17.06	10.15	11.54	24	25
Camacho.....	17.20	18.81	12.57	14.14	7	23
Empire.....	12.57	14.97	12.44	14.65	8	25
Gamboa.....	12.90	12.75	13.60	12.80	30	26
Juan Mina.....	12.30	12.26	12.71	12.42	3	25
Alhajuela.....	15.37	13.39	13.52	13.52	14	25
El Vigia.....	16.90	14.13	14.85	16.12	5	28
Gorgona.....	13.33	13.19	16.89	13.53	9	24
Frijoles.....			19.20		1	30
Trinidad.....	16.30	15.56	16.80	15.17	5	29
Monte Lirio.....	16.46	18.46	21.17	16.60	5	26
<i>Atlantic Section—</i>						
Gatun.....	16.02	16.92	14.52	16.62	8	25
Brazos Brook.....	12.22	14.56	17.97	15.19	7	30
Colon.....	15.65	16.53	17.65	14.29	43	26
Porto Bello.....	9.54	13.78	17.01	11.26	5	27

WEATHER CONDITIONS, CANAL ZONE, OCTOBER, 1912.

The rainfall for the month was heavy on both the Atlantic and Pacific coasts, but deficient at a number of stations in the interior. It was above the monthly average at eleven stations and below at seven. The total at Balboa was the greatest October rainfall of record at that station, and in only one year has it been exceeded at Ancon. The departure from the normal ranged from plus 6.97 inches at Ancon to minus 3.64 inches at Rio Grande.

The average air temperature was normal at each station, but the mean atmospheric pressure was below normal. On the Atlantic side the mean cloudiness and total wind movement were the greatest of record for October, but elsewhere these conditions were normal, or below.

There was a light fall of hail during a shower at Pedro Miguel on the afternoon of the 24th. Average conditions of foginess prevailed during the month. The greatest number occurred at Bas Obispo, where there were 30 days with fog. For all stations reporting fogs 50 per cent were dissipated by 6.30 a. m.; 89 per cent by 7.30 a. m., and 99 per cent by 8.30 a. m.

The following table summarizes the weather conditions for the month:

STATIONS.	Temperature.					Precipitation.			Wind.			
	Press're (reduced to mean of 24 hours.)	Mean.	Maximum.	Minimum.	Date.	Total inches.	Station average.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Date.
Colon.....	29.845	79.0	88	72	Oct. 12	17.65	14.29	26	5,490	S. E.	38	Oct. 23
Culebra.....	29.844	74.6	90	65	Oct. 5	10.15	11.54	25	3,505	N. W.	21	Oct. 7
Ancon.....	29.830	79.0	92	69	Oct. 5	17.89	10.92	23	4,538	N. W.	23	Oct. 28

OFFICIAL CIRCULARS.

Information on 120-Trip Tickets.

CULEBRA, C. Z., November 1, 1912.

CIRCULAR No. 221-B.

In the future the following instructions will be stamped on the back of 120-trip tickets issued by this office to employes for use on official business:

"Employes using 120-trip tickets must indicate on back of each coupon used the division in which employed, name of immediate superior, and business which necessitates the trip."

Effective at once, all employes using 120-trip tickets must furnish the information indicated above on the back of each coupon used, using the following form and numbering the items from 1 to 3, as shown:

1. Central Division.
2. John Doe.
3. Inspecting material at Pedro Miguel.

The first two items may be filled out in advance on 20 or 30 tickets, leaving only item 3 to be filled out at time of use.

GEO. W. GOETHALS, Chairman.

Purchase of Half-rate Mileage Books.

CULEBRA, C. Z., November 1, 1912.

CIRCULAR No. 420-D:

In the future, half-rate mileage books must be purchased at least fifteen minutes before passenger trains are scheduled to arrive at stations.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Corozal, C. Z., Sunday, November 10, at 4.30 p. m. The program follows:

1. March—Chicago Tribune.....Chambers
2. Selection—Robin Hood.....de Koven
3. Intermezzo—Indian Summer.....Moret
4. Overture—Le Pre aux Clercs.....Herold
5. Song for cornet—The Rosary (By request).....Nevin

6. Popular song—Take me Back to your Garden of Love.....Osborne
7. Waltz—Impassioned Dream.....Rosas
8. Potpourri of popular songs.....Harris
9. March—King of the Air.....Everlof

CHARLES E. JENNINGS, Musical Director.

The next concert will be given at Empire, November 17, at 6 p. m.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending November 13, 1912, (75th meridian time):

DATE.	Low	High	Low	High	Low
	A. M.	A. M.	A. M.	P. M.	P. M.
November 7.....	1.49	8.07	2.21	8.27	
November 8.....	2.37	8.53	3.08	9.13	
November 9.....	3.21	9.38	3.52	9.58	
November 10.....	4.03	10.22	4.33	10.42	
November 11.....	4.44	11.04	5.13	11.23	
November 12.....	5.24	11.46	5.54		
November 13.....	12.06	6.03	12.27	6.35	

Rainfall from October 1 to 31, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>			
Ancon.....	Ins.		Ins.
Balboa.....	3.40	12	17.89
Miraflores.....	3.83	12	15.75
Pedro Miguel.....	2.22	22	15.44
Rio Grande.....	1.78	26	10.48
	1.76	26	9.46
<i>Central Section—</i>			
Culebra.....	2.02	26	10.15
Camacho.....	1.51	26	11.57
Empire.....	2.18	20	12.44
Gamboa.....	2.07	20	13.60
Juan Mina.....	2.00	19	12.71
Alhajuela.....	1.96	14	13.52
El Vigia.....	2.10	21	14.85
Gorgona.....	3.00	31	16.89
Frijoles.....	3.36	7	19.20
Trinidad.....	2.63	31	16.80
Monte Lirio.....	2.24	30	21.17
<i>Atlantic Section—</i>			
Gatun.....	2.04	7	14.52
Brazos Brook.....	3.11	27	17.97
Colon.....	2.36	27	17.65
Porto Bello.....	2.98	15	17.01

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning November 6, 1912:

FRESH MEATS.	Price.
Mutton—Stewing per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire forequarter (not trimmed, 10 pounds and over), per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Leg (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	16
Chops, per pound.....	24
Loin for roasting, per pound.....	24
Cutlets, per pound.....	28
Pork—Loin chops or roast, per pound.....	18
Beef—Suet, per pound.....	2
Soup, per pound.....	5
Stew, per pound.....	8
Plate, per pound.....	9
Corned, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Chuck roast (3 pounds and over), per pound.....	12
Pot roast, per pound.....	15
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds), per pound.....	18
Sirloin roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, chuck, per pound.....	12½
Round, per pound.....	13
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds), per pound.....	20
Tenderloin (Western), per pound.....	130
Veal (Imported), Stew, per pound.....	6
Forequarter (not under 6½ pounds), per pound.....	9
Rack (not under 5½ pounds), per pound.....	20
Saddle (not under 7½ lbs.), per pound.....	20
Leg (not under 9 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
MISCELLANEOUS.	
Pate de Fole Gras, jar.....	55
Livers—Beef, per pound.....	11
Calf, each.....	60
Half, each.....	30
Steak Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	11
Frankfurter, per pound.....	12
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	19
Sweetbreads—Beef, per pound.....	30
Eggs, fresh, dozen.....	35
one-half dozen only.....	18
Bluefish, per pound.....	15
Halibut, fresh, per pound.....	15
Salmon, fresh, per pound.....	22
Fluke, fresh, per pound.....	10
Oysters, quarts, per keg.....	50
Shads, fresh, each.....	50
Roes, shad, pair.....	25

POULTRY AND GAME.

Chickens—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds each.....	1.25
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00
Fowls, each.....	1.60, 70, 80, 90.....
Ducks, (Western, about 4½ pounds), each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	35
Capons, each.....	2.10
Ducks, blackhead, pair.....	60
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants, per pair.....	1.30

CURED AND PICKLED MEATS.

Ham—German, Westphalia, per pound.....	36
Sugar cured, per pound.....	20
Sliced, per pound.....	21
Half, for boiling, per pound.....	22
Boiled, per pound.....	28
Hocks, per pound.....	78
Beef, salt family, per pound.....	12

Bacon—Breakfast, whole piece, per pound.....	25
sliced, per pound.....	26
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00
Pigs' feet, per pound.....	9
Tongues, per pound.....	18

DAIRY PRODUCTS.

Butter—Creamery, special, per pound.....	39
Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	45
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Parmesan, per pound.....	35
Edam, tin.....	26
Gouda, per pound.....	10
Milk (Certified), per bottle.....	*20
Butter, bottle.....	*15
Ice-mil-lac, bottle.....	*20
Ice cream, quart.....	725
½ gallon.....	750

VEGETABLES AND FRUITS.

Beets, per pound.....	4
Celery, per head.....	5
Cabbage, per pound.....	4
Cucumbers, per pound.....	4
Carrots, per pound.....	4
Lettuce, per pound.....	15
Onions, per pound.....	3½
Potatoes, white, per pound.....	3
sweet, per pound.....	5
Peppers, green, per pound.....	10
Romaine, per pound.....	3
Squash, per pound.....	3
Turnips, per pound.....	3
Tomatoes, per pound.....	3
Yams, per pound.....	4
Apples, per pound.....	4
Grape fruit, each.....	24
Lemons, dozen.....	80
Limes, per 100.....	11
Plums, per pound.....	8
Pears, per pound.....	12
Oranges, Jamaica, per dozen.....	12½
Pineapples, each.....	12½

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Balboa, Cristobal, and Colon during the week ending November 2:

Tricolor, October 26, from Aberdeen, Washington, with 33 pieces spud timbers, for Atlantic Division; three pieces spud timbers, for Pacific Division; 3,137-381 feet, B. M., Douglas fir lumber, 2,027 bales alfalfa hay, for stock.

Raum, October 27, from Mobile, with 18,159 pieces cross-ties, for stock.

Sixiola, October 27, from New York, with 41 cases electrical material, for superintendent of erection; 60 cases varnish, 40 coils rope, 30 barrels rosin, 21 cases fuse, for stock.

Colon, October 27, from New York, with 99 packages windows, doors, etc., for Panama Railroad Company; 44 cases drugs and sundries for Sanitary Department; 39 crates building paper, for Fortifications Division; 150 pieces malleable iron castings, 20 barrels journal bearings, for Mechanical Division; 47 cases steel bars, 139 bundles galvanized sheets, 119 bales cotton waste, 200 pieces steel plate, 25 crates pipe, 100 cases lanterns, 25 bundles shovels, 35 cases pick handles, 68 cases caustic soda, 323 pieces iron plates, 29 crates wrenches, for stock, and a miscellaneous cargo, the whole consisting of 1,845 pieces, weighing 340 tons.

Prinz Joachim, October 29, from New York, with 48 cases emergency dam material, for superintendent of erection.

Almirante, October 30, from New York, with 33 cases miscellaneous material, 1,502 sacks oats, for stock.
Atenas, October 31, from New Orleans, with 1,400 bags cement plaster, for Panama Railroad Company; 810 bales prairie hay, 15 cases lampblack, 133 pieces piling, for stock.

Luchana, October 31, from Baltimore, with 1,395 tons structural material for locks, for superintendent of erection; 465 tons structural material for Panama Railroad Company; 500 car wheels, for Mechanical Division; 500 pieces sewer pipe, 260 cases blasting caps, 447 pieces black pipe, for stock.

Mackinaw, November 2, from San Francisco, with 6,000 cases Trojan powder, for stock.

The following ships arrived at, or departed from, the port of Balboa during the week ending November 2: Arrivals—October 27, *Astec*, from San Francisco; October 28, *Mexico*, from Valparaiso; October 29, *Ecuador*, from Guayaquil; October 31, *Urubamba*, from Callao; November 2, *Mackinaw*, from San Francisco; November 2, *Panama*, from England.

Departures—October 28, *Pachitea*, to Callao; October 29, *Palena*, to Valparaiso; November 1, *Guatemala*, to Guayaquil.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Panama.....	P. R. R. Saturday.....Nov. 2
Allianca.....	P. R. R. Friday.....Nov. 8
Colon.....	P. R. R. Thursday.....Nov. 14
Advance.....	P. R. R. Wednesday.....Nov. 20
Panama.....	P. R. R. Tuesday.....Nov. 26
Allianca.....	P. R. R. Monday.....Dec. 3
Colon.....	P. R. R. Sunday.....Dec. 9
Advance.....	P. R. R. Saturday.....Dec. 14
Panama.....	P. R. R. Friday.....Dec. 20
Allianca.....	P. R. R. Thursday.....Dec. 27

CRISTOBAL TO NEW YORK.

Panama.....	P. R. R. Thursday.....Nov. 14
Allianca.....	P. R. R. Wednesday.....Nov. 20
Colon.....	P. R. R. Tuesday.....Nov. 26
Advance.....	P. R. R. Monday.....Dec. 2
Panama.....	P. R. R. Sunday.....Dec. 8
Allianca.....	P. R. R. Saturday.....Dec. 15
Colon.....	P. R. R. Friday.....Dec. 21
Advance.....	P. R. R. Thursday.....Dec. 26
Panama.....	P. R. R. Wednesday.....Jan. 2
Allianca.....	P. R. R. Tuesday.....Jan. 8

NEW YORK TO COLON.

Santa Marta.....	U. F. C. Wednesday.....Oct. 30
Prinz August Wilhelm.....	H. A. Saturday.....Nov. 2
Turrialba.....	U. F. C. Saturday.....Nov. 2
Metapan.....	U. F. C. Wednesday.....Nov. 6
Thames.....	R. M. Saturday.....Nov. 9
Tivives.....	U. F. C. Saturday.....Nov. 9
Prinz Sigismund.....	H. A. Saturday.....Nov. 9
Zacapa.....	U. F. C. Wednesday.....Nov. 13

COLON TO NEW YORK.

Almirante.....	U. F. C. Thursday.....Nov. 7
Prinz Eitel Friedrich.....	H. A. Monday.....Nov. 11
Carrillo.....	U. F. C. Tuesday.....Nov. 12
Trent.....	R. M. Tuesday.....Nov. 12
Santa Marta.....	U. F. C. Thursday.....Nov. 14
Prinz August Wilhelm.....	H. A. Tuesday.....Nov. 19
Turrialba.....	U. F. C. Tuesday.....Nov. 19
Metapan.....	U. F. C. Thursday.....Nov. 21

NEW ORLEANS TO COLON.

Heredia.....	U. F. C. Wednesday.....Oct. 30
Parismina.....	U. F. C. Saturday.....Nov. 2
Abangarez.....	U. F. C. Saturday.....Nov. 9
Cartago.....	U. F. C. Wednesday.....Nov. 13
Atenas.....	U. F. C. Saturday.....Nov. 16
Heredia.....	U. F. C. Wednesday.....Nov. 20

COLON TO NEW ORLEANS.

Atenas.....	U. F. C. Thursday.....Nov. 7
Heredia.....	U. F. C. Thursday.....Nov. 7
Parismina.....	U. F. C. Thursday.....Nov. 14
Abangarez.....	U. F. C. Thursday.....Nov. 21
Cartago.....	U. F. C. Thursday.....Nov. 21
Atenas.....	U. F. C. Thursday.....Nov. 28
Heredia.....	U. F. C. Thursday.....Nov. 28
Parismina.....	U. F. C. Thursday.....Dec. 5

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers for New York on alternate Tuesdays, at 2 p. m.; for Southampton on alternate Tuesdays, at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m. for Limon, via Bocas del Toro, on Tuesdays at 5 p. m.

Sale of Surveying Instruments, Compasses, and Ship's Log.

OFFICE OF DEPOT QUARTERMASTER.

MOUNT HOPE, C. Z., October 21, 1912.

Sealed bids will be received at the office of the Depot Quartermaster, Mount Hope, C. Z., until 2 p. m., November 9, 1912, when they will be opened in the presence of attending bidders, for any and all surveying instruments, compasses, and ship's log now on hand in the storehouse for obsolete material. These instruments may be seen on any working day between the hours of 7 to 11 a. m., and 1 to 5 p. m., on application to this office. The right is reserved to reject any or all bids or any combination of bids. Bids must be sealed and plainly marked: "Proposal to purchase Surveying Instruments," and addressed to the Depot Quartermaster, Mount Hope, C. Z.

CHARLES L. PARKER,
Acting Depot Quartermaster.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, NOVEMBER 13, 1912.

No. 12.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication, or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Upper Approach Wall at Gatun Locks.

The cellular approach wall at the upper end of Gatun Locks has been brought to full height throughout its length of 783 feet beyond the end of the solid center wall proper, and about one-third of the forms for the decking have been placed, but no concrete will be laid in them until after the wall has stopped settling. The wall is founded on concrete piles, and has been settling at the rate of approximately an inch a month ever since March, 1912, at which time it was half completed. The movement has been slightly more noticeable since the rise of the lake has subjected all of the surrounding area to depression. This settling, which was regarded by the engineers as inevitable, from the adjacent topography, has taken place evenly. The steel work of the towing and return tracks is being placed, and will be concreted in as the decking is laid.

Canal Work in October.

The grand total of Canal excavation to November 1 was 182,991,045 cubic yards, leaving to be excavated 29,235,955 cubic yards, or a little less than one-sixth of the entire amount necessary for the completed Canal. The total excavation for the month of October was 2,584,823 cubic yards, as compared with 2,331,678 cubic yards in October, 1911, and 2,884,382 cubic yards in October, 1910.

The dry excavation amounted to 1,406,051 cubic yards, and was entirely by steamshovels. The dredges and monitors removed 1,178,772 cubic yards. The progress in the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 680,461 cubic yards. Of this total, 1,700 cubic yards consisted of dry excavation at Gatun Locks, and the remainder was wet excavation—572,783 cubic yards from the Atlantic entrance, and 105,978 cubic yards dredged at Gatun Locks.

The total excavation in the Central Division was 1,119,847 cubic yards, which

includes 6,427 cubic yards in the Culebra Cut section charged to "plant" excavation. The output for October in the Central Division showed an increase over September of 184,791 cubic yards.

In the Pacific Division, the total excavation was 784,515 cubic yards, 219,959 cubic yards of which consisted of dry excavation in the prism between Pedro Miguel and Miraflores locks, and south of Miraflores Locks; 49,181 cubic yards on account of the Balboa terminals, and the remainder from the locks and spillway sites. Of the 500,011 cubic yards of wet excavation, 493,115 cubic yards were from the channel, including 88,963 cubic yards removed by monitors, while 6,896 cubic yards were taken out at the Miraflores locks and dam.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
	Cu. Yds.	Cu. Yds.	Cu. Yds.
Dry excavation—			
Locks, dam and spillway	1,700		1,700
Mindi			
Total	1,700		1,700
Wet excavation—			
Atlantic entrance.	572,783		572,783
Locks, dam and spillway.	105,978		105,978
East Diversion			
Total	678,761		678,761
Total wet and dry excavation	680,461		680,461

CENTRAL DIVISION.

Dry excavation—			
Culebra Cut.....	1,113,420	6,427	1,119,847
Chagres section.....			
Obispo Diversion.....			
Total.....	1,113,420	6,427	1,119,847

PACIFIC DIVISION.

Dry excavation—			
Locks, dams and spillways	15,364		15,364
Prism, south of Miraflores Locks.....	219,959		219,959
Balboa terminals.....	49,181		49,181
Total.....	284,504		284,504
Wet excavation—			
Pacific entrance.....	481,890	11,225	493,115
Miraflores, Locks and Dam.....	6,896		6,896
Total.....	488,786	11,225	500,011
Total wet and dry excavation	773,290	11,225	784,515

TOTAL CANAL EXCAVATION.

Dry excavation.....	1,399,624	6,427	1,406,051
Wet excavation.....	1,167,547	11,225	1,178,772
Total.....	2,567,171	17,652	2,584,823

Mean rainfall along Canal (ten stations) 14.01 inches. By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as a prism, diversions, or locks, etc. that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as

prism, diversions, or locks, etc., It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

LOCK AND DAM CONSTRUCTION.

MATERIAL.	Atlantic.	Pacific.	Total
	Cu. Yds.	Cu. Yds.	Cu. Yds.
Concrete laid in locks.	3,252	61,377	64,629
Concrete laid in dams and spillways.....	1,617	40	1,657
Fill placed in dams....	258,999	73,532	332,531

New Tourist Season Steamship Service.

The Peninsular and Occidental Steamship Company, which maintains a regular service between New York, Miami, and Key West, Florida, and Havana, Cuba, has arranged for a series of eight fortnightly sailings to the Isthmus during the coming dry season. A new steamship, the *Evangeline*, which is especially equipped for tropical travel, will be placed in this service, and, according to present plans, will leave Key West on its first voyage on January 7. The sailing time to the Isthmus will be about 70 hours. Two days will be spent here, and, on the return trip, a two-day stop will be made at Jamaica, and a short stop at Havana.

Release Refused to Nicaraguan Prisoners.

The Supreme Court of the Canal Zone has refused the writ of *habeas corpus* instituted to deliver from the custody of the Canal Zone Government the persons of Gen. Luis Mena, and Col. Daniel Mena, his son, leaders in the recent Nicaraguan revolution, who were taken prisoners by the United States forces and brought to the Canal Zone, where Gen. Mena has been receiving medical treatment at Ancon Hospital. The court based its decision on the grounds that the imprisonment of the petitioners was upon the order of the President of the United States and within his constitutional authority in dealing with the foreign affairs of the Government.

School Attendance Larger Than Last Year.

Eleven hundred and fifty-seven pupils were enrolled in the white schools of the Canal Zone at the close of October, an increase of 157 over the enrollment for the opening week of school, and 81 more than the total enrollment for October of last year.

The new white school for first, second and third grades at Corozal, was opened on October 28, with 27 pupils, 19 of which had been attending school at Ancon since the beginning of the term. The white school at Toro Point for primary grades was opened on October 14, with 10 pupils. The upper grade room in the Culebra white school has been discontinued, and the children in the fifth, sixth, seventh, and eighth grades are being sent to Empire by brake.

Eighteen colored schools are maintained, the same number as last year. The total enrollment at the close of October was 1,042, an

SOCIAL LIFE OF THE ZONE.

Gatun Sunshine Society's Charity Ball.

The Gatun Sunshine Society held a charity ball on All Hallowe'en in the local clubhouse, at which the sum of \$145 was cleared. Since its organization in 1908, the Sunshine Society has raised \$1,101.15, which has been devoted to the Gatun dormitory in the Arthur Home for Blind Babies at Summit, N. J. The dormitory has been furnished throughout, including a supply of linens sufficient for several years. The present membership of the society is 36. The meetings are held on the first Wednesday in each month in the Commission chapel.

Carnival at Gorgona.

A carnival will be held at the clubhouse in Gorgona on Saturday evening, November 16, the proceeds from which will be used in carrying out, on an extensive scale, what will probably be the last Christmas celebration in that village. The program for the carnival festivities include a parade, fireworks, a "Mid-way," and a dance in the clubhouse hall. The train schedule on Saturday nights is especially suited for those living at other Canal Zone towns who would like to attend. About three years ago, a similar carnival was held in the interest of the Red Cross fund, when the gross receipts amounted to over \$400. It is desired to make this occasion a still greater success, in order that the Christmas arrangements may be carried out fully.

Meetings of Ancon Study Club.

In future, the meetings of the Ancon Study Club will be held at the home of Mrs. Mark White, in the Tivoli section. The change is made, because the club library, containing encyclopedia and reference books, is in her home. The meetings are at 3 o'clock, and study begins promptly on the hour.

Woman's Guild of St. Luke's Chapel.

At the annual meeting of the Woman's Guild of St. Luke's Hospital chapel, two changes in the by-laws were made, as follows: First, to increase the number of officers by the addition of a second vice-president. Second, to reduce the number of meetings to one each month. This meeting will be held on the first Tuesday in each month at the home of one of the members, by invitation. The committees for the month will be appointed at this time, and all business will be transacted. The disbursements for the year amounted to over \$200, which were expended for charity, in gifts and offerings, and in meeting the expenses of the guild. For the sale of Red Cross Christmas stamps, Mrs. Charles W. Barber was appointed chairman. The officers elected were: President, Miss Beattie, first vice-president, Mrs. Charles F. Mason; second vice-president, Mrs. Henry A. Brown; secretary, Miss Kate Feuille; treasurer, Mrs. C. W. Barber. The November meeting was held on Tuesday afternoon, November 5, at the home of Mrs. H. A. Gudger.

American Veterans of Foreign Service.

The American Veterans of Foreign Service will meet in their post rooms, building No. 1, Cristobal, at 8.30 p. m., on Saturday, November 16. A special program has been arranged for the "Smoker," which will follow the regular business session. A cordial in-

itation is extended to all eligibles to attend this meeting, also, to the veterans of the Blue and the Gray.

PERSONAL.

The Honorable Henry L. Stimson, Secretary of War, and party, sailed for the Isthmus on the United Fruit Company's steamer *Zacapa* on Wednesday, November 13. He will remain until the 26th inst., returning to New York on that date, on the Panama railroad steamship *Colon*.

The following members of the House Committee on Appropriations sailed from New York on the steamship *Cristobal* on Friday, November 8, and are due to arrive at Cristobal on Friday, November 15: Representatives John J. Fitzgerald of New York, chairman of the committee, accompanied by his wife and two children; Charles L. Bartlett of Georgia, accompanied by Mrs. Bartlett; Edward L. Taylor, Jr. of Ohio, accompanied by Mrs. Taylor; Edward W. Saunders of Virginia, accompanied by his wife and two children; Swagar Sherley of Kentucky. Among other members of the party are Representatives James R. Mann of Illinois, accompanied by Mrs. Mann; Henry M. Goldfogle of New York, and John J. Gardner of New Jersey.

Col. Tom M. Cooke returned from his leave of absence, accompanied by Mrs. Cooke, on the United Fruit Company's steamer *Turrialba*, which arrived at Colon on Sunday, November 10.

Capt. Courtland Nixon returned from his annual leave on the *Panama*, which docked at Cristobal, Friday, November 8.

Trial of Charles W. Boxer.

Charles W. Boxer, charged with embezzling the funds of a local secret order, was returned to the Isthmus in the custody of an officer on November 5, from San Francisco, in which city he was apprehended. He was arraigned in the circuit court at Ancon on Monday, November 11, where his case was continued until Monday, November 18.

Fatal Accident at Pedro Miguel Lock.

James Tyrell, an employee of the McClintic-Marshall Construction Company at Pedro Miguel, fell from a scaffold on the lock wall at 10.30 a. m., Tuesday, and was instantly killed. He pitched directly into the opening of a floor culvert in the lock chamber, breaking his neck in the fall.

Obituary.

Joshua W. Kendall, who left the service of the Canal Commission in November, 1911, after a service extending over five years, died in Washington, D. C., on Wednesday, October 23. He was 45 years of age, a widower, and is survived by his two daughters.

I. B. of S. S. and D. M.

Local No. 19, International Brotherhood of Steamshovel and Dredge Men will hold its regular monthly meeting at the Hotel Metropole, Panama, on Sunday, November 17, at 1 p. m. All members are requested to attend.

J. I. MAJOR,
Secretary and Treasurer.

EMPIRE, C. Z., November 12, 1912.

LOST—In passenger station at Colon, in the morning of November 5, a pair of nose eye glasses with chain for ear attachment. Finder will please return to Mrs. J. T. Stanner, Bas Obispo.

STEAMSHOVEL RECORDS.

Work of Central Division Machines During the Month of October.

During the month of October, the total amount of material excavated in the Central Division was 1,119,847 cubic yards, of which 153,010 cubic yards were classified as earth, and 966,837 cubic yards as rock. The total of 1,119,847 cubic yards was removed by steamshovels.

The high record for the month was made by shovel No. 212, working 26 days in the Culebra district, which excavated 46,379 cubic yards of rock.

The second best record for the month was made by shovel No. 262, working 27 days in the Empire district, which excavated 46,117 cubic yards of rock.

The best record for a shovel of the 70-ton class was made by shovel No. 124, working 27 days in the Culebra district, which excavated 16,732 cubic yards of rock, and 3,500 cubic yards of earth, a total of 20,232 cubic yards.

Shovel No. 212, working in the Culebra district, made a high record for one day by excavating 2,660 cubic yards of rock on October 22.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best records for the month, and for one day, are shown in the following table:

BEST RECORDS FOR THE MONTH.

CULEBRA DISTRICT.

SHOVEL No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
212.....	.....	46,379	46,379	26
256.....	.....	41,489	41,489	27
210.....	24,521	16,348	40,869	27

EMPIRE DISTRICT.

262.....	46,117	46,117	27
220.....	44,862	44,862	26
211.....	39,307	39,307	27

BEST RECORDS FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards
216	Empire.....	Oct. 14..	Rock.....	2,486
262	Empire.....	Oct. 2..	Rock.....	2,440
220	Empire.....	Oct. 3..	Rock.....	2,326
212	Culebra.....	Oct. 22..	Rock.....	2,660
206	Culebra.....	Oct. 18..	Rock.....	2,413
212	Culebra.....	Oct. 15..	Rock.....	2,404
260	Culebra.....	Oct. 2..	Rock.....	2,394

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, engineers, and chauffeurs will be held by the Board of Local Inspectors at the Administration Building, Ancon, on Wednesday, November 20, 1912. All applicants for licenses as chauffeurs must procure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8 a. m., with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their ability to properly operate an automobile, and must have the machine with them.

LOST—In Panama, in the vicinity of Santa Ana Plaza, on Sunday afternoon, November 3, a Canal medal, forming a watch fob. Reward is offered on return to A. B. Stewart, P. O. box 108, Gorgona.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the complete Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

MONTHS.	CENTRAL DIVISION.				CHACABAS SECTION.			
	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.
Jan.	1,250,449	1,227,022	1,350,249	1,323,693	1,456,394	1,416,065	1,694,447	389,399
Feb.	1,250,449	1,227,022	1,350,249	1,323,693	1,456,394	1,416,065	1,694,447	389,399
March	1,250,449	1,227,022	1,350,249	1,323,693	1,456,394	1,416,065	1,694,447	389,399
April	1,250,449	1,227,022	1,350,249	1,323,693	1,456,394	1,416,065	1,694,447	389,399
May	1,250,449	1,227,022	1,350,249	1,323,693	1,456,394	1,416,065	1,694,447	389,399
June	1,250,449	1,227,022	1,350,249	1,323,693	1,456,394	1,416,065	1,694,447	389,399
July	1,250,449	1,227,022	1,350,249	1,323,693	1,456,394	1,416,065	1,694,447	389,399
Aug.	1,250,449	1,227,022	1,350,249	1,323,693	1,456,394	1,416,065	1,694,447	389,399
Sept.	1,250,449	1,227,022	1,350,249	1,323,693	1,456,394	1,416,065	1,694,447	389,399
Oct.	1,250,449	1,227,022	1,350,249	1,323,693	1,456,394	1,416,065	1,694,447	389,399
Nov.	1,250,449	1,227,022	1,350,249	1,323,693	1,456,394	1,416,065	1,694,447	389,399
Dec.	1,250,449	1,227,022	1,350,249	1,323,693	1,456,394	1,416,065	1,694,447	389,399
Totals	14,557,034	14,557,034	15,398,599	16,596,891	17,980,832	3,787,992	3,153,669	460,564

ATLANTIC DIVISION.

MONTHS.	ATLANTIC DIVISION.				PACIFIC DIVISION.			
	1906.	1907.	1908.	1909.	1906.	1907.	1908.	1909.
Jan.	292,155	102,690	125,011	65,889	1,330	1,230	1,230	1,230
Feb.	292,155	102,690	125,011	65,889	1,330	1,230	1,230	1,230
March	292,155	102,690	125,011	65,889	1,330	1,230	1,230	1,230
April	292,155	102,690	125,011	65,889	1,330	1,230	1,230	1,230
May	292,155	102,690	125,011	65,889	1,330	1,230	1,230	1,230
June	292,155	102,690	125,011	65,889	1,330	1,230	1,230	1,230
July	292,155	102,690	125,011	65,889	1,330	1,230	1,230	1,230
Aug.	292,155	102,690	125,011	65,889	1,330	1,230	1,230	1,230
Sept.	292,155	102,690	125,011	65,889	1,330	1,230	1,230	1,230
Oct.	292,155	102,690	125,011	65,889	1,330	1,230	1,230	1,230
Nov.	292,155	102,690	125,011	65,889	1,330	1,230	1,230	1,230
Dec.	292,155	102,690	125,011	65,889	1,330	1,230	1,230	1,230
Totals	2,774,561	793,835	1,234,234	235,952	78,530	256,780	739,355	1,234,234

*Total to Nov. 1, 1912, 56,483,656 cubic yards. Excavated in 1904, May to December, 243,472 cubic yards.
 †Total to Nov. 1, 1912, 12,324,655 cu. yds., of which 192,769 cu. yds. were removed in 1907, 188,239 cu. yds. were removed by sluicing.
 ‡Dry excavation at Miraflores Locks, 1912, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 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2895, 2896, 2897, 2898, 2899, 2900, 2901, 2902, 2903, 2904, 2905, 2906, 2907, 2908, 2909, 2910, 2911, 2912, 2913, 2914, 2915, 2916, 2917, 2918, 2919, 2920, 2921, 2922, 2923, 2924, 2925, 2926, 2927, 2928, 2929, 2930, 2931, 2932, 2933, 2934, 2935, 2936, 2937, 2938, 2939, 2940, 2941, 2942, 2943, 2944, 2945, 2946, 2947, 2948, 2949, 2950, 2951, 2952, 2953, 2954, 2955, 2956, 2957, 2958, 2959, 2960, 2961, 2962, 2963, 2964, 2965, 2966, 2967, 2968, 2969, 2970, 2971, 2972, 2973, 2974, 2975, 2976, 2977, 2978, 2979, 2980, 2981, 2982, 2983, 2984, 2985, 2986, 2987, 2988, 2989, 2990, 2991, 2992, 2993, 2994, 2995, 2996, 2997, 2998, 2999, 3000, 3001, 3002, 3003, 3004, 3005, 3006, 3007, 3008, 3009, 3010, 3011, 3012, 3013, 3014, 3015, 3016, 3017, 3018, 3019, 3020, 3021, 3022, 3023, 3024, 3025, 3026, 3027, 3028, 3029, 3030, 3031, 3032, 3033, 3034, 3035, 3036, 3037, 3038, 3039, 3040, 3041, 3042, 3043, 3044, 3045, 3046, 3047, 3048, 3049, 3050, 3051, 3052, 3053, 3054, 3055, 3056, 3057, 3058, 3059, 3060, 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3227, 3228, 3229, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3265, 3266, 3267, 3268, 3269, 3270, 3271, 3272, 3273, 3274, 3275, 3276, 3277, 3278, 3279, 3280, 3281, 3282, 3283, 3284, 3285, 3286, 3287, 3288, 3289, 3290, 3291, 3292, 3293, 3294, 3295, 3296, 3297, 3298, 3299, 3300, 3301, 3302, 3303, 3304, 3305, 3306, 3307, 3308, 3309, 3310, 3311,

P. R. R. SIGNAL SYSTEM.

Interpretation of New Scheme of Interlocking, Automatic, and Train Order Signals.

Under the new scheme of signaling on the Panama railroad all signals will be of the semaphore type, and all arms will work in the upper right hand quadrant. The disc signals between Tower "R" and Matachin Junction, and the lower quadrant signals on the Isthmian Canal Commission tracks, and those between Gorgona and bridge No. 57½, will remain in service, however, until these tracks are abandoned.

In the new scheme of signaling there are but three classes, consisting of interlocking, automatic, and train order signals. The automatic and interlocking signals are electrically connected in automatic territory. The train order signals are always controlled manually by the telegraph operator on duty at the cabin or station.

LOCATIONS.

All automatic and interlocking signals carry their arms about 24 feet above the rail, and are located on the right hand side of the track as viewed by an approaching train. This always presents the red side of the blade to the vision of the train crew.

Diversions from this general rule consist

their station work while getting orders, and without any part of the train passing the "31" order arm when in its stop position. Frijoles, Monte Lirio, and Gatun will be equipped with train order signals of this kind. They will be electrically operated, but controlled manually by the operator on duty.

ASPECTS.

Collectively, all three classes of signals are capable of giving but five aspects. These are known as: 1. Stop. 2. Proceed at limited speed. 3. Proceed at normal speed. 4. Proceed at safely reduced speed. 5. "19" orders.

"Stop" aspects can be given by all signals which display red arms with square ends. The "Stop" aspect is the basis on which the element of safety rests, and must be obeyed in all cases. The "Stop" aspect is given with the arm in the horizontal position. The night indication consists of one red light on one-arm poles, two or more red lights, arranged vertically, on interlocked home signals, having more than one arm, or a red light above a yellow light on train order signals.

"Limited speed" is given with the arm inclined upward at an angle of 45 degrees. Automatic signals, semiautomatic one arm home signals, and the semiautomatic top arm of an interlocked home signal having more

in this position denotes stop, wait two minutes (or longer,) send a flagman forward, and if the signal does not assume one of its proceed positions while waiting, to follow the flag at a safe speed and distance to the next proceed aspect. On double track, an automatic in its stop position requires a dead stop of 30 seconds. The train can then proceed at "Limited speed" until they pick up a proceed aspect. The top arm on a train order signal when in its stop position can only be passed with a clearance card from the operator on duty. Home signals at stop can only be passed by receiving a proceed hand signal from the interlocking signalman with a yellow flag, or a yellow lantern.

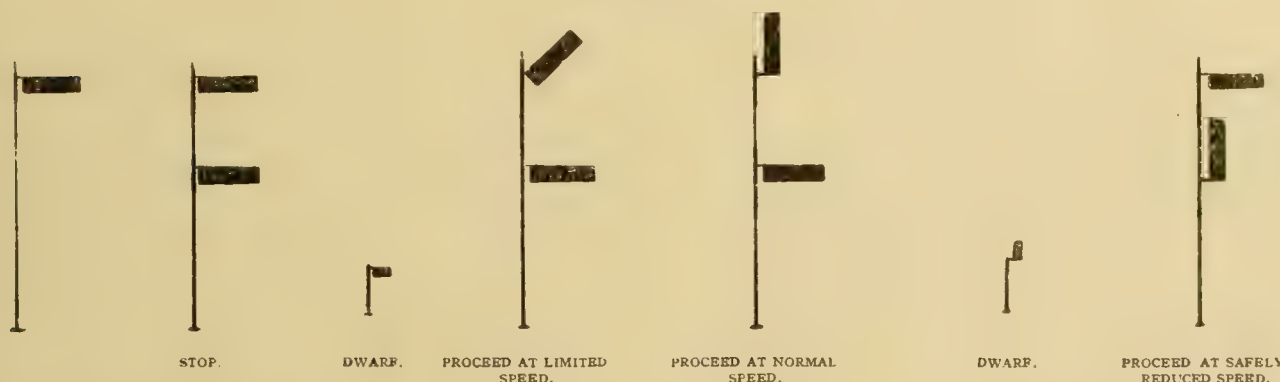
"Limited speed" is a speed at which the engineman can stop his train within the range of vision.

"Normal speed" is that speed usually assumed by all trains when running in accordance with the book of rules, the time table, and special instructions governing the speed of trains through that territory.

"Safely reduced speed" is a slow, safe speed required in taking crossovers, or other turnouts.

"19" orders are signified by the lower arm of the train order signal. The engineman, when observing this, sounds five short blasts of

INTERLOCKING SIGNALS.



in the use of dwarf signals at interlocking plants, when the general layout makes a dwarf signal advisable, and the application of a cantilever attachment to a high signal when local conditions prevent its location on the right hand side of the track it governs.

The cantilever is a dead mast or "doll" fixed to the signal pole and supporting a stationary blue light by night. When displayed from the left of a signal it designates that the signal had to be located on the left hand side of the track it governs. When the cantilever is displayed from the right hand side of the signal pole it denotes there is an existing track between the signal and the track it governs, and that the signal does not control movements on the track between the main and the signal. A signal located to the right of two or more tracks that does not display a cantilever, governs trains on all tracks in that direction.

Train order signals are located at cabins and display two arms for either direction. When train order signals are in use at a station, the scheme will be changed by erecting two poles, each about 350 feet in advance of the station building. Each of these poles will display two arms for trains in that direction only, and will allow passenger trains to do

than one arm, are capable of giving a "Limited speed" aspect. The night indication is one yellow light, or one yellow light above one or two red lights.

"Normal speed" can be given by all signals, excepting the dwarf and the lower arms on an interlocked home signal. The arm is inclined to a vertical position and its center line is parallel with the center line of the signal mast. The night indication is one green light, a green light above one or two red lights, or, as with the train order signal, two green lights arranged vertically.

"Proceed at safely reduced speed" can be given only by a dwarf signal, or one of the lower arms on an interlocked home signal having more than one arm. The arm in both cases is brought up to its vertical or 90-degree position. The night indications are either one green light (on the dwarf,) a green light below one red, a green between two reds, or a green below two red lights.

DEFINITIONS.

The "Stop" aspect means to stop before any part of the train passes the signal. After the stop is made there is then ample time to determine the class of the signal and ascertain the legitimate method by which to again proceed. An automatic signal on single track

the whistle to notify the crew on the rear end.

There is nothing in the scheme of signaling which interferes with the necessity of proper train orders or the observance of Rule 99.

AUTOMATIC SIGNALS.

Automatic signals are controlled automatically, as their name indicates. A continuous track circuit is a prime element of control, and this is supplemented by a line circuit carried on the telegraph poles. Automatic signals offer protection against broken rails, open switches, rails, or frogs removed, cars beyond the fouling point, and disconnected derails. Head and rear end protection on single track, and rear end protection on double track, is assured through the proper observance of aspects and obedience to the rules. Typical arrangement of automatic signals is made by placing two signals on either end of a passing track, and an outlying signal about 3,000 feet from the switch to govern approaching trains from either direction. Protection between stations is carried on by erecting one or more pairs of opposing signals, according to the distance between the two passing tracks. Where stations are near each other, approach signals are left out, and one pair of opposing signals installed. The object in placing two signals at either end of a

passing track is to impart information to trains about to enter the main track at that point, concerning the condition of track in advance, as well as in the rear. These two automatic signals perform this function in addition to their regular duties for trains running along on the main track.

At crossovers and nonimportant sidings, small miniature signals, enclosed in cast iron cases, are installed to impart information to trains about to enter the main track. These are called switch indicators, and signify whether or not a train may proceed. Indicators will also be installed in all interlocking towers, in order that the signalman may know

current passes from the track battery along one rail to the relay, through the relay, energizing same and picking up its armature. The current then returns on opposite rail to battery. This holds the signal normally at its "Proceed at normal speed" position. The presence of a train with its numerous wheels and axles offers a path of less resistance than that offered through the 4-ohm track relay. The train in this manner shunts out the track battery, deenergizing the track relay, and allowing the armature to open. The local signal battery is then interrupted, and, as soon as this interruption takes place, current is taken from the slot arm on the signal and the signal itself

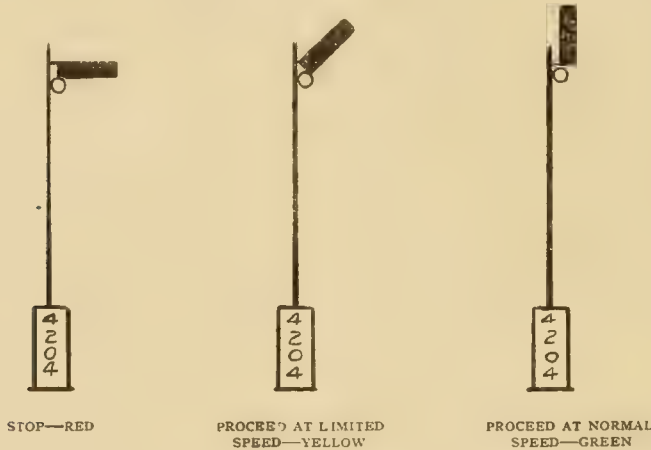
in the same manner described when a train is occupying a track circuit. These switch boxes complete their electrical connection when points or derails are thrown out of their normal positions. Protection against open switches is given in this manner. Two or three cells of gravity battery furnish current for the track circuit. These cells are equipped with a special 4-pound amalgamated circular zinc and pan bottom type of battery copper.

The lower compartment of each signal case contains 16 primary cells, connected in series, and having 400-ampere hour capacity. This battery operates the signal, and furnishes current to the polarized control for the next signals in the rear, as well as indicators, or other special circuits, that may originate at that point. Number 10, B. & S. gage copper clad wire, with three braid, weatherproof insulation, is used for overhead wires on single track installation, and No. 10 hard drawn copper is used for all line circuits on double track.

The automatic signal is of a type called "Style B." The direct current motor operates on 10 volts. Power is carried to the up and down rod through a series of reduction gears, and this mechanical connection is maintained only when the slot arms are energized by current from the proper circuit. One motor moves the signal arm from 0 to 45 degrees, as well as from 45 to 90 degrees, as both slot arms are connected to the up and down rod by a rack and pinion. Mechanisms are equipped with Veeder counters, which register all upward movements of the slot arm.

A signal called "Style T" is used for all semiautomatic home signals. This signal is of the top post type, being clamped directly to the existing home signal pole. Its internal mechanism is similar to the "Style B," except it is less rugged and occupies a smaller case. Battery for this type of signal is placed in a separate shelter near the base of the pole. The doors on all signal cases fit against hemp

AUTOMATIC BLOCK SIGNALS.



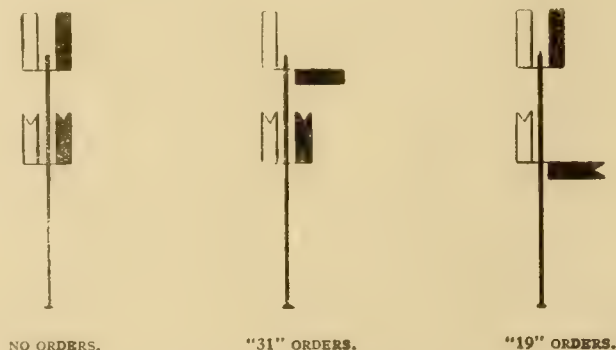
the condition of the track, both in the rear, and in advance, when passing a train from siding to the main. The spacing and general arrangement of automatic signals is sufficiently flexible to allow them to be changed over to alternating current control, should the Panama railroad be electrified at some future date.

No distant signals are used at interlocking plants; the first automatic signal in advance taking care of this function. In fact, this scheme of distant signals is carried out further than similar installations in the United States, for, on the Panama railroad, the term "Distant signal" has been abandoned, and trains will be brought up to all stop aspects under "Limited speed," regardless of the class of signal, the arm of which occupies the stop position. The train running on the main line is further protected by pipe connected derails on all important sidings, these being mechanically operated from switch stand. These derails are equipped with a switch box, which will put the signals on either side of them to "Stop," should the derail be disconnected and out of service. Derails on a passing track, or siding, act as a permanent landmark for all trains using this track, and show the exact fouling point. They prevent trains from creeping up beyond the fouling point, and also compel the brakeman to go to the switch stand, where he can observe the switch indicators, before the train can foul the track circuit of the main line. Track circuits average 3,000 feet in length. They are separated with insulated rail joints. All track joints are bonded with two No. 6, B. & S. gage copper clad bond wires. These bond wires are connected to the rail by a tinned channel pin, the wire fitting into a groove in the side of the pin and making a perfect electrical contact when driven tightly into a 9/32-inch hole.

When no train is on the track circuit, the

then assumes the stop position by gravity. All electrical connections are designed on the closed circuit scheme, which places the signal to "Stop" in case of any electrical failures. The mechanical arrangement is also designed on the same basis, so, should there be any mechanical disconnection in the signal mechanism, the signal will assume a stop position by gravity. This is assisted by the upper quadrant spectacle, which allows a proper

TRAIN ORDER SIGNALS.



distribution of weight on the spectacle castings, in such a manner, that the blade itself will go to its stop position, should all connections be removed. These arrangements make all failures on the safe side, and eliminate all probabilities of that dangerous condition known as "False clear failure."

Derails, main line, and crossover switches, are equipped with switch boxes, which places a short circuit on the track battery and acts

packing, and are under tension when closed and locked. All cases are properly ventilated to secure proper circulation of air.

Relays, switch indicators, and lightning arresters are sheltered in iron cases of special design, supported either on posts with separate concrete foundations, or applied to the side of the existing poles. Track batteries are placed in cast iron boxes having a capacity of six cells. After wires are run into

any iron case, all apertures are filled with paraffine wax to exclude insects.

Lamps are of the improved semaphore type, Railway Signal Association standard. They are equipped with four day burners and prismatic reflectors. All colored glass are solid color, moulded to exact shape, and then polished. These are held in place by soft rubber clips under the retaining rings.

The first section of automatic signals to be put in service will be between Corozal and Tower "R," the installation on this section being completed. The second section will embrace the territory between Gatun and Cai-

mito; the balance of the installation will be made as rapidly as conditions will permit.

The Panama railroad will issue a revised edition of the Book of Rules at an early date. All rules governing the operation of signals will be treated in a concise manner and fully explained by colored cuts in this book. For the present, trains will operate under automatic signals as outlined in the book of signal instructions.

The work of installation is under the supervision of W. H. Fenley, Signal Engineer, Panama Railroad Company.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The standing of the teams in the bowling league on Monday, November 11 was, as follows:

Team.	Won	Lost	P. C.
Gatun.....	13	5	.722
Empire.....	12	6	.666
Cristobal.....	10	8	.555
Culebra.....	7	11	.388
Gorgona.....	6	12	.333
Corozal.....	6	12	.333

The standing of the teams in the basketball tournament on Monday, November 11 was, as follows:

Team.	Won	Lost	P. C.
Empire.....	4	0	1.000
Corozal.....	4	1	.800
Gorgona.....	2	3	.400
Gatun.....	0	3	.000
Cristobal.....	0	3	.000

Considerable interest was manifested in the mock elections held at the clubhouses on election night. It is estimated that over 3,000 people came out for the purpose of voting, receiving the returns from the United States, and listening to the program provided.

The mock election for national candidates resulted, as follows:

	Cristobal.	Gatun.	Gorgona.	Empire.	Culebra.	Corozal.	Totals.
Roosevelt.....	224	102	115	428	71	87	1,027
Wilson.....	200	212	101	111	77	81	782
Debs.....	26	50	285	20	12	47	440
Taft.....	33	33	10	17	7	6	106
Chaffin.....	2	2	4	62	1		69

The mock elections for mayors in the various villages resulted, as follows:

Corozal—Mrs. F. Rawley, Suffragette, 76; W. P. Holmes, Progressive, 48; W. L. Thompson, Democrat, 33; M. W. Ruggles, Socialist, 51; J. A. McCullough, Republican, 9.

Culebra—Bliss, Married Progressive, 166; Cooke, Independent Progressive, 154.

Empire—Gorham, Progressive, 232; Wertz, Republican—Democrat, 64; Sawtelle, Socialist, 39.

Gorgona—Morrison, Socialist, 295; Tom Ryan, Independent Democrat, 151; B. M. Robinson, Progressive, 99.

Gatun—W. B. Childers, Democrat, 212; Maj. G. M. Hoffman, Republican, 63; G. A. Barte, Socialist, 61; Dr. A. G. Farmer, Progressive, 54.

Cristobal—J. A. Smith, Progressive, 273; Ross Wallace, P. R. R. 135; E. P. Wilson, I. C. C., 133.

COROZAL.

Over 300 people were at the clubhouse on Tuesday night, November 5, to hear the election returns, and to take part in the mock election. The program consisted of reading of the Corozal local party platforms, speeches by the candidates for offices, and casting of ballots. Besides the returns, there were many stereopticon slides, consisting of views of the Isthmus, etc. On Friday evening, November 15, there will be an installation of the newly elected officers, and a reception for the Corozal bachelors at the clubhouse.

Cristobal will bowl at Corozal on Saturday night, November 16.

The first number of the "Forum" will take place at the clubhouse on Sunday evening, November 17. Mr. F. A. Gause will deliver an address, and special music will be furnished by the Tropical Male Quartet.

CULEBRA.

At the mock election held in the schoolhouse on Tuesday evening, November 5, polls were opened at 6 p. m., and closed at 9 p. m. Voting booths were erected on the lower veranda, and judges, challengers, clerks, and counters were kept busy until 10 o'clock, when it was found that the "Married Progressive" party had elected their candidate for alcalde by a majority of

12 votes, Mr. Bliss polling 166 and Mr. Cooke 154. The officials-elect were equally divided between the two parties, both sides electing eight, with two ties. Moving pictures were shown, seven reels being provided, and slides giving election returns from the United States, as well as locally, were thrown on the screen. Music was furnished by Gray's orchestra during the entire evening, and the Culebra Male Quartet, consisting of Messrs. Ross, Dickson, Case, and Lieut. Achers, sang political songs. Refreshments were served during the evening.

The new bowling alleys and poolroom were opened on Tuesday night, November 12.

EMPIRE.

Empire and Culebra bowled the tournament games on the Empire alleys on Friday, November 8, Empire winning two out of three games. Scores:

Empire.....	717	872	869
Culebra.....	830	803	776

The basketball game between Empire and Corozal, played at Empire on Saturday, November 9, was an unusually close contest. At the end of the game, the score was tied, each team having six points to its credit. In the five minute play-off, the Empire team made five baskets, winning the game by 16 to 6. Empire has won four games and lost none. Mr. Sartor was referee.

A chess match was held on Saturday night, November 9, when Mr. Shutes of Cristobal played Messrs Pulsifer, Sherrard, Knight, Warner, Dubois, McClure, Rose, Beeman, Caldwell, Halfhill, and Hobbs. Mr. Shutes won seven and one-half games and lost three and one-half games. Those winning were Messrs. Pulsifer, Knight, and Beeman. Mr. Rose tied.

The following men have entered the November pool tournament: Messrs. Newbold, Lidaner, Huson, Gray, Pearson, Jackson, Davies, Edwards, Sawtelle, Gustavson, Mullane, Swab, Donnelly, Entriken, Kosier, Toone, Miller, Bergstrom, Earle, and King. The handball tournament will be started this week. Ten men have entered already.

The entertainment held on election night was attended by an audience of over 400. The program consisted of solos, quartets, duets, and moving pictures. Five hundred and eighty people voted in the local election, the "Bull Moose" party winning by a large majority, both for the national and local candidates.

GORGONA.

A concert will be given by the Gorgona chorus on Sunday, November 24.

Five hundred and ninety-two votes were cast at the mock election held Tuesday, November 5. The standing of the parties were, as follows: Socialists, first; Independents, second; Democrats, third; and Progressives, fourth.

A wrestling class has been organized to meet once a week. The boys' gymnasium classes are growing.

Gorgona took two out of three games in bowling on Saturday night. Scores:

Gorgona.....	817	750	765
Corozal.....	793	865	706

Gorgona won the basketball game on Saturday from Cristobal. The score was 25 to 14 in favor of Gorgona. The referee was Mr. Carr of Empire.

The sacred concert that was planned for November 17, is postponed until November 24.

GATUN.

In a match game of bowling played on the Gatun alleys, on Saturday, November 9, between Cristobal and Gatun, the latter took three straight games. Gatun, therefore, for the present, leads the Isthmian tenpin tournament.

The new pool cues have arrived from the United States and are now on sale at the desk.

The membership of the Gatun clubhouse has now reached high water mark, namely 455.

Subscriptions for magazines and newspapers will be sent in during the next few days, to cover the period

from January 1, 1912, to January 1, 1913. Any suggestions will be considered.

Moving pictures will be shown on Saturday night, November 16.

CRISTOBAL.

On Friday night, November 15, "Open house" will be held. Entertainment and refreshments will be furnished. Everybody welcome.

On Saturday night, November 16, the Gatun basketball team will play the local team.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the two weeks ending November 9:

DATE.	Hours worked.	Cubic yards.
October 28.....	5.40	2,163
October 29.....	7.45	1,795
October 30.....	7.50	2,549
October 31.....	7.05	1,836
November 1.....	7.55	2,294
November 2.....	3.50	1,329
	40.05	11,966
November 4 (Holiday).....		
November 5.....	6.45	2,187
November 6.....	7.20	2,291
November 7.....	7.55	2,797
November 8.....	6.35	2,377
November 9.....	8.15	2,833
Total.....	36.50	12,485

Rainfall from November 1 to 9, 1912, Inclusive.

STATIONS	Maximum in one day.	Date.	Total for period.
Pacific Section—	Ins.		Ins.
Ancon.....	1.57	4	3.09
Balboa.....	1.35	4	3.11
*Miraflores.....	1.05	5	2.17
Pedro Miguel.....	.41	7	1.68
Rio Grande.....	.50	5	1.80
Central Section—			
Culebra.....	.70	5	2.10
*Camacho.....	.97	7	2.40
Empire.....	1.10	7	2.67
Gambou.....	1.21	6	3.81
*Juan Mina.....	2.02	8	6.12
Alhajuela.....	1.27	8	3.63
*El Vigia.....	1.60	6	3.63
*Gorgona.....			74.10
*Frijoles.....	1.74	7	7.95
*Monte Lirio.....	1.52	3	6.86
Atlantic Section—			
Gatun.....	1.58	2	6.51
*Brazos Brook.....	3.02	6	9.63
Colon.....	2.94	4	9.23
Porto Bello.....	2.20	4	76.52

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values, midnight to midnight. †To 3 p. m., November 11. ‡To 5 p. m., November 8.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending November 20, 1912. (75th meridian time):

DATE.	High	Low	High	Low	High
	A. M.	A. M.	A. M.	P. M.	P. M.
November 14.....	12.50	6.45	1.11	7.18	
November 15.....	1.37	7.28	1.58	8.07	
November 16.....	2.28	8.18	2.51	9.00	
November 17.....	3.29	9.20	3.50	10.03	
November 18.....	4.33	10.30	4.52	11.05	
November 19.....	5.32	11.38	5.50		
		P. M.			
November 20.....	12.01	6.27	12.35	6.40	

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Empire, C. Z., on Sunday, November 17, at 6 p. m. The program follows:

1. March—*Chicago Tribune*..... Chambers
2. Selection—*Bohemian Girl* (By request)..... Balfe
3.(a) *Visions*..... Hayes
-(b) *Narcissus* (By request)..... Nevin
4. Overture—*Le Pre aux Clercs*..... Herold
5. Popular song—*Climb a Tree With Me*..... Harris
6. Selection—*The Spring Maid* (By request) Reinhardt
7. Waltz—*Impassioned Dream*..... Rosas
8. Medley of popular songs..... Harris
9. March—*Spirit of Independence*..... Holzman

CHARLES E. JENNINGS, Musical Director.

The next concert will be given at Hotel Tivoli, Ancon, on Sunday, November 24, at 8 p. m.

OFFICIAL CIRCULARS.

Thanksgiving Day.

CULEBRA, C. Z., November 6, 1912.

CIRCULAR No. 462:

Thanksgiving Day, Thursday, November 28, 1912, will be observed as a holiday in the Canal Zone, and as far as practicable, all public business will be suspended on that day.

GEO. W. GOETHALS, *Chairman.*

Cessation of Work on November 2, in Honor of the Late Vice-President.

CULEBRA, C. Z., November 6, 1912.

CIRCULAR No. 463:

Under authority of the President's proclamation, of which, advice was received on the morning of November 2, work was stopped at 11 a. m. for the remainder of the day, in honor of our late Vice-President, whose funeral occurred on that date.

Employees paid on an annual or monthly basis will be allowed time for that period under the same rules governing payment for Sunday time. For other employees, time will be carried the same as for an ordinary working day and payment made only for services rendered.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Ratings and Rates of Pay.

CULEBRA, C. Z., November 9, 1912.

CIRCULAR No. 229-Y:

In addition to the present authorized rating of chainmen at \$30 a month, the following rates of pay are hereby authorized:

Chainmen, (Special).....\$37.50 per month.
Foremen, (Chainmen)..... 45.00 per month.

The men now employed as foremen (chainmen) at \$50 a month may be continued at that rating until their services are terminated. In the future, no foremen (chainmen) will be promoted to a rate of pay in excess of \$45 a month.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Reduced Rate on United Fruit Company's Steamers.

CULEBRA, C. Z., November 9, 1912.

CIRCULAR No. 175-1:

Effective November 15, 1912, the reduced rate of \$40 granted I. C. C. employees on the United Fruit Company's line from Colon to New Orleans will apply only to direct steamers. Employees desiring to travel on coastwise steamers will be charged the regular tariff rate of \$50.

GEO. W. GOETHALS, *Chairman*

Charges for Special Handling of Shipments by Panama Railroad Steamship Company.

CULEBRA, C. Z., November 11, 1912.

CIRCULAR No. 186-F:

It is sometimes necessary for the Panama railroad steamship line to hire special equipment to load on steamers such shipments as large launches, etcetera. When employees are granted the reduced rate on such shipments they will be required to pay, in addition to the freight rate, any charges for such special handling.

GEO. W. GOETHALS,
*Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.*

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Colon, Cristobal, and Balboa during the week ending November 9:

Carrillo, November 3, from New York, with 97 cases electrical material, 49 reels cable, 44 cases iron wrenches, 44 cases wrench boards, for superintendent of erection.

Ancon, November 4, from New York, with 67 cases books, 32 reels wire rope, 434 bundles shovels, 400 kegs lead, and 154,285 bags cement, for stock; 578 bundles steel bars, for Pacific Division; 17 boxes water gate posts, for superintendent of erection; 10,100 pieces tile blocks, for Panama Railroad Company; 532 bundles steel bars, for Division of Fortifications; and a miscellaneous cargo, the whole consisting of 166,925 packages, weighing 8,045 tons.

Odenwald, November 5, from Hamburg, with 30 cases lock valves, for superintendent of erection.

Santa Marta, November 6, from New York, with 20 reels cable, for superintendent of erection; 50 cases soap, 215 coils rope, for stock.

Pennsylvania, November 6, from San Francisco, with 544 pieces sugar pine lumber, for stock.

Prinz Eitel Friedrich, November 6, from New York, with 267 kegs rivets, 75 bundles coil springs, for stock.

Parismina, November 7, from New Orleans, with 1,565 barrels brick, Panama Railroad Company; 570

pieces yellow pine lumber, 615 drums, for Mechanical Division; 500 cases oils, 110 pieces piling, 332 pieces yellow pine lumber, 1,897 bales hay, for stock.

Panama, November 8, from New York, with 53 boxes sales books, 300 kegs paint, 1,170 kegs wire nails, 12 cases harness soap, 12 barrels chipped soap, for stock; 200 rolls wire fence, for Sanitary Department; 82 barrels insulators, 32 boxes water gate parts, for superintendent of erection; 21 cases brass tubes, for Pacific Division; and a miscellaneous cargo, the whole consisting of 2,280 packages, weighing 152 tons.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others 8 a. m. to 1 p. m., and 3 to 7 p. m.

Cold Storage Prices.

The following changes have been made in the prices of cold storage supplies:

Pork, loin chops, or roast, advanced to 20 cents a pound.
Buttermilk, out of stock.
Beets, reduced to three cents a pound.
Cucumbers, advanced to eight cents a pound.
Carrots, reduced to three cents a pound.
Tomatoes, out of stock.
Plums, out of stock.
Pineapples, out of stock.

Misdirected Letters.

ANCON, C. Z., November 13, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be procured upon request of the addressee:

Adams, Mrs. Elizabeth	Marshall, Dr. H. C.
Alexander, J. E.	Mason, Aaron O.
Amrhein, W. L.	McCan, Miss M. R.
Baker, Jesse	McKenzie, John W.
Barrett, Mrs. E.	Moore, Miss Nina
Brown, Miss Carey H.	Nicholas, E. C.
Burrell, Mrs. J. A.	Novey, George F.
Campbell, Miss Lena	Ortega, Marion
Carpenter, Mrs. Annie	Pryme, Mrs. Rose
Carroll, Robert W.	Richards, Frederick N.
Cheney, J. W.	Richardson, Mrs. J. A.
Clark, William C. (2)	Ross, Rev. Dr. J. D. W.
Clarke, Miss Ethel M.	Schmeck, H.
Clarke, Thomas H. S.	Shaffer, A.
Cooke, Miss Cecelia	Shins, Ralph A.
Darling, W. W.	Shore, C. P.
Deluca, Angelo	Smith, S.
Dickson, D. B.	Stankey, Mrs. R.
Doeling, Mrs. S.	Stirewalt, Jacob P.
Dunn, John S.	Stockdell, Edward (4)
Eskridge, Capt. Oliver S.	Titus, Geo. L.
Fenton, Geo. D.	Todd, Mrs. Ann L.
Fetters, Wm.	Walker, Richard
Fitzpatrick, J. E.	Walsh, William
Gouldstone, Mrs. A. G.	Warren, Miss Marie
Gutierrez, Ismael	White, Clarence A.
Hall, Willia L., Jr.	Wilson, Sam B.
Hoff, Mrs. Wm.	Wood, T. E.
Kennedy, K.	Wrafter, Thomas
Kulp, William D.	Wright, Thos. Emanuel
Maddera, J. W.	Zacharias, Albert

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, November 9, 1912. All heights are in feet above mean sea level.

DAY AND DATE.	STATION.			
	Vigia.	Alhajuela	Camboa.	Gatun Lake
Sun., Nov. 3.....	129.4	95.1	55.4	55.1
Mon., Nov. 4.....	132.1	96.9	56.0	55.2
Tues., Nov. 5.....	129.9	96.0	56.0	55.4
Wed., Nov. 6.....	128.1	94.6	56.0	55.5
Thurs., Nov. 7.....	128.5	94.4	56.1	55.6
Fri., Nov. 8.....	128.4	94.4	56.4	55.8
Sat., Nov. 9.....	127.6	93.8	56.3	55.8
Height of low water to nearest foot.....	125.0	91.0	44.0	

Married.

MONROE-HENNIGH—On Wednesday evening, November 6, in the Union Church, Cristobal, Miss Eva Belva Hennigh of Punxsutawney, Pa., to Dr. Fletcher Frazer Monroe of Cincinnati, Ohio, the Rev. Carl H. Elliott officiating. Canal Zone residence, Ancon.

FOUND—Small gold locket near hospital laboratory, Ancon, on Friday, November 8. Address THE CANAL RECORD, Ancon.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Allianca.....	P. R. R. Friday.....	Nov. 8
Colon.....	P. R. R. Thursday.....	Nov. 14
Advance.....	P. R. R. Wednesday.....	Nov. 20
Panama.....	P. R. R. Tuesday.....	Nov. 26
Allianca.....	P. R. R. Tuesday.....	Dec. 3
Colon.....	P. R. R. Monday.....	Dec. 9
Advance.....	P. R. R. Saturday.....	Dec. 14
Panama.....	P. R. R. Friday.....	Dec. 20
Allianca.....	P. R. R. Friday.....	Dec. 27

CRISTOBAL TO NEW YORK.

Panama.....	P. R. R. Thursday.....	Nov. 14
Allianca.....	P. R. R. Wednesday.....	Nov. 20
Colon.....	P. R. R. Tuesday.....	Nov. 26
Advance.....	P. R. R. Monday.....	Dec. 2
Panama.....	P. R. R. Sunday.....	Dec. 8
Allianca.....	P. R. R. Sunday.....	Dec. 15
Colon.....	P. R. R. Saturday.....	Dec. 21
Advance.....	P. R. R. Thursday.....	Dec. 26
Panama.....	P. R. R. Thursday.....	Jan. 2
Allianca.....	P. R. R. Wednesday.....	Jan. 8

NEW YORK TO COLON.

Metapan.....	U. F. C. Wednesday.....	Nov. 6
Thames.....	R. M. Saturday.....	Nov. 9
Tivives.....	U. F. C. Saturday.....	Nov. 9
Prinz Sigismund.....	H. A. Saturday.....	Nov. 9
Zacapa.....	U. F. C. Wednesday.....	Nov. 13
Prinz Joachim.....	H. A. Saturday.....	Nov. 16
Sixaola.....	U. F. C. Saturday.....	Nov. 16
Almirante.....	U. F. C. Wednesday.....	Nov. 20
Prinz Eitel Friedrich.....	H. A. Saturday.....	Nov. 23
Carrillo.....	U. F. C. Saturday.....	Nov. 23
Trent.....	R. M. Saturday.....	Nov. 23
Santa Marta.....	U. F. C. Wednesday.....	Nov. 27
Prinz August Wilhelm.....	H. A. Saturday.....	Nov. 30
Turrialba.....	U. F. C. Saturday.....	Nov. 30
Prinz Sigismund.....	H. A. Saturday.....	Dec. 7
Magdalena.....	R. M. Saturday.....	Dec. 7

COLON TO NEW ORLEANS.

Santa Marta.....	U. F. C. Thursday.....	Nov. 14
Prinz August Wilhelm.....	H. A. Monday.....	Nov. 18
Turrialba.....	U. F. C. Tuesday.....	Nov. 19
Metapan.....	U. F. C. Thursday.....	Nov. 21
Prinz Sigismund.....	H. A. Monday.....	Nov. 25
Tivives.....	U. F. C. Tuesday.....	Nov. 26
Magdalena.....	R. M. Tuesday.....	Nov. 26
Zacapa.....	U. F. C. Thursday.....	Nov. 28
Prinz Joachim.....	H. A. Monday.....	Dec. 2
Sixaola.....	U. F. C. Tuesday.....	Dec. 3
Almirante.....	U. F. C. Thursday.....	Dec. 5
Prinz Eitel Friedrich.....	H. A. Monday.....	Dec. 9
Tagus.....	R. M. Tuesday.....	Dec. 10

NEW ORLEANS TO COLON.

Abangarez.....	U. F. C. Saturday.....	Nov. 9
Cartago.....	U. F. C. Wednesday.....	Nov. 13
Atenas.....	U. F. C. Saturday.....	Nov. 16
Heredia.....	U. F. C. Wednesday.....	Nov. 20
Parismina.....	U. F. C. Saturday.....	Nov. 23
Abangarez.....	U. F. C. Saturday.....	Nov. 30

COLON TO NEW ORLEANS.

Parismina.....	U. F. C. Thursday.....	Nov. 14
Abangarez.....	U. F. C. Thursday.....	Nov. 21
Cartago.....	U. F. C. Thursday.....	Nov. 21
Atenas.....	U. F. C. Thursday.....	Nov. 28
Heredia.....	U. F. C. Thursday.....	Nov. 28
Parismina.....	U. F. C. Thursday.....	Dec. 5

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers for New York on alternate Tuesdays, at 2 p. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston, and Santiago de Cuba, at 2 p. m., on sailing dates.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m. for Limon, via Bocas del Toro, on Tuesdays at 5 p. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending November 9: Arrivals—November 4, *Peru*, from San Francisco; November 4, *Peru*, from Guayaquil; November 2, *Manasi*, from Buenaventura; November 5, *Pennsylvania*, from San Francisco; November 6, *Hualalga*, from Callao; November 6, *Limari*, from Valparaiso. Departures—November 5, *Mexico*, to Valparaiso; November 7, *Tricolor*, to San Francisco; November 4, *Urubamba*, to Guayaquil; November 8, *Astec*, to San Francisco.

STATEMENT OF
CONSTRUCTION EXPENDITURES
TO SEPTEMBER 30, 1912

(Part II of The Canal Record, November 13, 1912.)

STATEMENT OF CONSTRUCTION EXPENDITURES TO SEPTEMBER 30, 1912

Table No. 1.

Includes administrative and general expenses, but does not include "General Items" or expenditures for sanitation, hospitals, or civil administration.

ITEMS.	FIRST QUARTER, FISCAL YEAR 1913.			To JUNE 30, 1912			TOTAL TO SEPTEMBER 30, 1912.		
	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
<i>Atlantic Division—</i>	<i>Cubic Yards.</i>								
1 Dry excavation, prism				2,181,998	\$1,454,789.95	\$0.6667	2,181,998	\$1,454,789.95	\$0.6667
2 Hydraulic excavation, prism				29,605	11,671.32	.3942	29,605	11,671.32	.3942
3 Dredging excavation, prism	1,297,115	\$299,289.95	\$0.2307	28,842,955	6,956,729.41	\$0.2412	30,140,070	7,256,019.36	.2407
<i>Gatun Spillway—</i>									
4 Dry excavation				1,544,202	\$1,096,180.59	\$0.7099	1,544,202	\$1,096,180.59	\$0.7099
5 Preparing foundations	175	\$307.42	\$1.7567	44,091	96,467.51	2.1879	44,266	96,774.93	2.1862
6 Masonry	3,668	46,149.91	12.5818	202,413	1,590,298.18	7.8567	206,081	1,636,448.09	7.9408
7 Ironwork		11,768.07			114,117.87			125,885.94	
8 Back filling				24,716	12,456.18	.5400	24,716	12,456.18	.5400
9 Machinery					29,981.71			29,981.71	
Total		\$58,225.40			\$2,939,502.04			\$2,997,727.44	
<i>Gatun Dam—</i>									
10 Dredging excavation				38,425	\$20,041.19	\$0.5216	38,425	\$20,041.19	\$0.5216
11 Dry filling	592,734	\$254,319.31	\$0.4291	10,061,800	4,484,382.70	.4457	10,654,534	4,738,702.01	.4448
12 Hydraulic filling	214,718	91,091.49	.4242	10,514,247	3,149,262.40	.2995	10,728,965	3,240,353.89	.3020
13 Paving				40,411	14,719.69	.3642	40,411	14,719.69	.3642
Total		\$345,410.80			\$7,668,405.98			\$8,013,816.78	
<i>Gatun Locks—</i>									
14 Dry excavation				4,555,395	\$3,080,613.71	\$0.6763	4,555,395	\$3,080,613.71	\$0.6763
15 Dredging excavation	278,548	\$129,247.62	\$0.4640	1,372,451	380,855.61	.2775	1,650,999	510,103.23	.3090
16 Preparing foundations, excavation				195,313	391,756.61	2.0029	195,313	391,756.61	2.0029
17 Preparing foundations, filling				40,117	15,226.73	.3796	40,117	15,226.73	.3796
18 Preparing foundations, concrete piling (lineal feet)				83,670	134,572.36	1.6084	83,670	134,572.36	1.6084
19 Preparing foundations, wooden piling (lineal feet)				51,450	37,870.41	.7361	51,450	37,870.41	.7361
20 Filling around south approach wall, dry				7,072	3,777.61	.5342	7,072	3,777.61	.5342
21 Filling around south approach wall, hydraulic				594,495	94,077.49	.1582	594,495	94,077.49	.1582
22 Masonry	18,641	204,986.73	10.9965	1,875,434	13,910,799.37	7.4173	1,894,075	14,115,786.10	7.4526
23 Gates		387,532.52			1,021,783.37			1,409,315.89	
24 Ironwork		35,294.71			1,314,629.01			1,349,923.72	
25 Backfilling	271,419	147,118.75	.5420	1,462,074	781,248.66	.5343	1,733,493	928,367.41	.5355
26 Filling center wall	15,872	16,180.93	1.0194	97,291	77,858.06	.8003	113,163	94,038.99	.8310
27 Operating machinery		531,866.08			553,837.31			1,085,703.39	
28 Emergency Dams		17,070.17						17,070.17	
Total		\$1,469,297.51			\$21,798,906.31			\$23,268,203.82	
<i>Gatun power plant (permanent)</i>									
29 Dry excavation	14,948	\$6,537.29	\$0.4373	72,119	\$28,760.02	\$0.3988	87,067	\$35,297.31	\$0.4064
30 Preparing foundations	6,633	7,258.12	1.0942				6,633	7,258.12	1.0942
31 Masonry	196	2,486.80	12.6877				196	2,486.80	12.6877
32 Machinery		26,576.37			8,855.00			35,431.37	
Total		\$42,858.58			\$37,615.02			\$80,473.60	
<i>Gatun-Mindi Levee—</i>									
33 Dry fill				177,158	\$68,985.15	\$0.3894	177,158	68,985.15	.3894
34 Hydraulic fill				20,398	3,483.32	.1708	20,398	3,483.32	.1708
Total					\$72,468.47			\$72,468.47	
35 Colon breakwater	26,721	\$198,750.09	\$7.4380	885,063	\$1,663,968.34	\$1.8801	911,784	\$1,862,718.43	\$2.0429
Total construction cost, Atlantic Division		\$2,413,832.33			\$42,604,056.84			\$45,017,889.17	
36 Plant and equipment to be absorbed in construction costs after Sept. 30 1912.								\$1,029,449.96	
Total expenditures, Atlantic Division								\$46,047,339.13	
<i>Central Division—</i>									
37 Dry excavation, prism	3,353,210	\$1,877,198.60	\$0.5598	94,401,681	\$76,313,361.80	\$0.8084	97,754,891	\$78,190,560.40	\$0.7999
38 Clearing Canal line, without excavation, (acres)				2,280	141,426.75	62.0293	2,280	141,426.75	62.0293
39 Dredging excavation					9,798.40			9,798.40	
40 Masonry				1,271	8,353.66	6.5725	1,271	8,353.66	6.5725
41 Masonry, cement gun facing (sq. yds.)				4,250	4,079.11	.9598	4,240	4,079.11	.9598
Total construction cost Central Division		\$1,877,198.60			\$76,477,019.72			\$78,354,218.32	
42 Plant and equipment to be absorbed in construction costs after Sept. 30, 1912.								\$12,712.87	
Total expenditures, Central Division								\$78,341,505.45	
<i>Pacific Division—</i>									
43 Dry excavation, prism	479,133	\$411,568.42	\$0.8590	1,302,418	\$1,050,203.26	\$0.8063	1,781,551	\$1,461,771.68	\$0.8205
44 Dredging excavation, prism	1,011,846	\$284,560.96	\$0.2816	32,471,259	\$7,852,800.11	0.2418	33,483,105	\$8,137,761.07	.2430
45 Hydraulic excavation, prism	277,368	\$289,598.14	\$1.0441	1,098,273	\$656,428.49	.5977	1,375,641	\$946,026.63	.6877
<i>Pedro Miguel Dam—</i>									
46 Concrete work	897	\$4,400.98	\$4.9063				897	\$4,400.98	\$4.9063
47 Dry excavation	1,230	2,633.37	2.1409	8,011	\$12,528.60	\$1.5639	9,241	15,161.97	1.6407
48 Dry filling	42,246	20,848.44	.4935	582,441	292,193.88	.5017	624,687	313,042.32	.5011
Total		\$27,882.79			\$304,722.48			\$332,605.27	
<i>Pedro Miguel Locks—</i>									
49 Dry excavation	3,044	\$1,373.01	\$0.4511	1,130,236	\$1,030,119.50	\$0.9114	1,133,280	\$1,031,492.51	\$0.9102
50 Preparing foundations	6,553	13,525.92	\$2.0641	160,621	438,816.38	2.7320	167,174	452,342.30	2.7058
51 Masonry	20,549	162,095.09	7.8882	847,926	4,845,607.03	5.7147	868,475	5,007,702.12	5.7661
52 Gates		27,715.84			804,058.11			831,773.05	
53 Ironwork		18,719.54			633,224.18			651,943.72	
54 Backfilling	42,891	17,500.54	.4080	632,600	249,790.01	.3949	675,491	267,290.55	.3957
55 Filling center wall	13,891	6,980.68	.5025	21,937	22,809.13	1.0397	35,828	29,789.81	.7668
56 Operating machinery		330,180.41			174,329.46			504,509.87	
Total		\$578,091.03			\$8,198,753.80			\$8,776,844.83	
<i>Miraflores East Dam—</i>									
57 Excavation	3,000	\$15,524.58	\$5.1749		10,836.74		3,000	\$26,361.32	\$8.7871
<i>Miraflores West Dam—</i>									
58 Dry filling	100,930	\$47,524.23	\$0.4709	1,241,624	\$624,151.54	\$0.5027	1,342,554	\$671,675.77	\$0.5003
59 Hydraulic filling		4,241.24			33,730.15			37,971.39	
60 Masonry, core wall	150	662.59	4.4173		522.31		150	1,184.90	7.8993
61 Dry excavation	1,333	1,740.55	1.3057		19,991.26		1,333	21,731.81	16.3029
Total		\$54,168.61			\$678,395.26			\$732,563.87	

*Denotes credit.

(Table 1—Continued)

ITEMS.	FIRST QUARTER, FISCAL YEAR 1913.			To JUNE 30, 1912.			TOTAL TO SEPTEMBER 30, 1912.		
	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
<i>Miraflores Spillway—</i>									
62 Iron work		\$503.79			20,687.21			\$21,191.00	
<i>Miraflores Locks—</i>									
63 Dry excavation, diversions.				5,885	\$2,028.98	\$0.3448	5,885	\$2,028.98	\$0.3448
64 Dry excavation, in locks.				2,222,582	2,064,655.73	.9289	2,222,582	2,064,655.73	.9289
65 Dredging excavation				309,647	142,379.66	.4598	309,647	142,379.66	.4598
66 Hydraulic excavation				332,703	195,299.02	.5870	332,703	195,299.02	.5870
67 Preparing foundations, excavation	15,511	\$42,744.18	\$2.7557	366,933	672,291.20	1.8322	382,444	715,035.38	1.8696
68 Preparing foundations, wooden piles (in feet).....	11,305	2,428.17	.2148	6,580	53,846.54	8.1834	17,885	56,274.71	3.1465
69 Masonry	187,581	1,104,544.34	5.8884	1,026,103	5,141,830.19	5.0110	1,213,684	6,246,374.53	5.1466
70 Gates		289,431.52			152,299.29			441,730.81	
71 Iron work		46,378.65			804,594.66			850,973.31	
72 Backfilling	248,577	122,348.46	.4922	1,026,586	323,863.08	.3155	1,275,163	446,211.54	.3499
73 Filling center wall	8,207	12,612.49	1.5368	7,912	8,414.52	1.0635	16,119	21,027.01	1.3045
74 Operating machinery		122,431.91			167,059.82			289,491.73	
Total		\$1,742,919.72			\$9,728,562.69			\$11,471,482.41	
<i>La Boca Locks and Dams—(abandoned).</i>									
75 Dry excavation				78,233	\$158,343.29	\$2.0240	78,233	\$158,343.29	\$2.0240
76 Construction dam					315,350.07			315,350.07	
77 Construction locks					159,306.40			159,306.40	
Total					\$632,999.76			\$632,999.76	
78 Naos Island breakwater	66,944	\$59,147.35	\$0.8835	782,021	192,945.47	\$0.2467	848,965	252,092.82	\$0.2969
79 Terminal Facilities—Balboa		\$273,851.16			\$172,886.63			446,737.79	
Total construction cost, Pacific Division		\$3,738,216.55			\$29,500,221.90			\$33,238,438.45	
80 Plant and equipment to be absorbed in construction costs after Sept. 30, 1912.								\$1,967,049.52	
Total expenditures, Pacific Division								\$35,205,487.97	
81 Lighting and buoying canal		\$28,589.00			\$150,228.54			\$178,817.54	
Total expenditures, constr. and eng'ng								\$159,773,150.09	

Item 39—Central Division Dredging Excavation Prism, preliminary surveys.

Item 41—Represents operation of cement gun used in facing walls of the cut.

Item 59—Pacific Division, Miraflores Dam, Hydraulic Filling. Expenditures represent cost of pipe lines, flumes, etc. 661,048 cubic yards have been deposited in the dams from dredges and hydraulic excavation in lock chambers and in prism below the locks. The expense thereof has been charged to excavation.

Items 75, 76 and 77—Pacific Division, Laboca Locks and Dams. This expense was incurred prior to the adoption of Miraflores as the site for the lower locks and dam at the Pacific entrance of the canal.

Item 78—Naos Island Breakwater. Though shown under Pacific Division, the breakwater is being constructed entirely by the Central Division with material from the cut. Only the excess cost of dumping here as compared with regular dumps is charged to this item.

Items 36, 42, and 80—The expenditures for Plant and equipment are absorbed in the construction costs on the basis of estimated cost of the plant and estimated quantities of work to be done. The amounts shown under these items represent the balances which are to be absorbed into construction costs after September 30, 1912.

General—When excavated material is used for filling, such as dams, back-filling, etc., the cost of dumping only is charged to the item benefited, other expenses being charged to Excavation.

DAM CONSTRUCTION.

Table No. 2.

Detailed cost per cubic yard for quarter ending September 30, 1912.

	GATUN DAM.				PEDRO MIGUEL DAM.				MIRAFLORES DAM.			
	July	August	Sept	Total	July	August	Sept	Total	July	August	Sept	Total
<i>Excavation—Quantities—cubic yards</i>					274		956	1,230			4,333	4,333
Excavation					\$1.9289		\$1.8247	\$1.8475			\$1.5623	\$2.0415
Tracks .....											.7442	1.3534
Pumps .....											.0464	.0464
Maintenance of equipment .....											.0270	.0637
Plant arbitrary .....											.1813	.1813
Division expense .....					.0948		1060	1035			.0543	.1006
Total division cost					\$2.0237		\$1.9307	\$1.9514			\$2.5691	\$3.7869
Administrative and general expense .....					.1901		.1894	.1895			.1263	.1976
Total cost					\$2.2138		\$2.1201	\$2.1409			\$2.6954	\$3.9845
<i>Masonry—Quantities—cubic yards</i>					479	418		897	150			150
Concrete					\$3.1524	\$3.7372		\$3.5300	\$3.6637			\$3.6637
Plant arbitrary						1.5021		7000				.5400
Maintenance of equipment .....						.1823		3841				.0196
Division expense .....					.0767	.0890		.0889	.0196			
Total division cost					\$3.2291	\$5.5106		\$4.7030	\$3.6833			\$4.2233
Administrative and general expenses .....					.1537	.2352		.2033	.1940			.1940
Total cost					\$3.3828	\$5.7458		\$4.9063	\$3.8773			\$4.4173
<i>Dry Fill—Quantities—cubic yards</i>	207,405	201,029	184,300	592,734	16,150	12,481	13,615	42,246	37,820	45,140	17,970	100,930
Clearing site												
Excavation	\$0.0678	\$0.0625	\$0.0787	\$0.0694								
Tracks .....	.0886	.1197	.1122	.1064	\$0.1783	\$0.2019	\$0.1347	\$0.1712	\$0.0908	\$0.1036	\$0.2291	\$0.1212
Trestles .....	.0009	.0010*	.0030	.0009								
Transportation .....	.0752	.0917	.0840	.0835	.0629	.1331	.0999	.0956	.0357	.0821	.2290	.0909
Filling .....	.0357	.0484	.1256	.0680	.0823	.1372	.0798	.0978	.0542	.0619	.1516	.0750
Maintenance of equipment .....	.0376	.0306	.0622	.0429	.0654	.0799	.0718	.0717	.0392	.0446	.1466	.0607
Plant arbitrary .....									.0800	.0800	.0800	.0800
Division expense .....	.0212	.0247	.0292	.0249	.0267	.0246	.0146	.0221	.0145	.0131	.0279	.0162
Total division cost	\$0.3270	\$0.3766	\$0.4949	\$0.3960	\$0.4156	\$0.5767	\$0.4008	\$0.4584	\$0.3144	\$0.3853	\$0.8642	\$0.4440
Administrative and general expense .....	.0239	.0208	.0469	.0331	.0327	.0422	.0314	.0351	.0179	.0210	.0605	.0269
Total cost	\$0.3509	\$0.4064	\$0.5418	\$0.4291	\$0.4483	\$0.6189	\$0.4322	\$0.4935	\$0.3323	\$0.4063	\$0.9247	\$0.4709
<i>Hydraulic Fill—Quantities—cubic yards</i>	108,463	43,589	62,666	214,718								
Clearing site												
Clearing for dredge	\$0.0142	\$0.0336	\$0.0050	\$0.0154								
Dredging .....	.1577	.2364	.0585	.1442								
Relay pumps .....	.0214	.0384	.0078	.0209								
Pipe lines .....	.0149	.0435	.0206	.0224								
Wood flumes .....	.0028	.0038	.0013	.0025								
Power .....	.0957	.1911	.0238	.0941								
Small boats .....	.0034	.0113	.0245	.0112								
Maintenance of equipment .....	.0476	.1535	.0534	.0713								
Plant arbitrary												
Division expense .....	.0129	.0303	.0092	.0154								
Total division cost .....	.3706	.7419	.2041	.3974								
Administrative and general expense .....	.0215	.0502	.0200	.0268								
Total cost	\$0.3921	\$0.7921	\$0.2241	\$0.4242								

*Denotes credit.

LOCKS AND SPILLWAYS CONSTRUCTION.

Table No. 3.

Detailed cost per cubic yard for quarter ending September 30, 1912:

ITEMS.	GATUN SPILLWAY.				GATUN LOCKS.				PEDRO MIGUEL LOCKS.				MIRAFLORES LOCKS.			
	July.	Aug.	Sept.	Total.	July.	Aug.	Sept.	Total.	July.	Aug.	Sept.	Total.	July.	Aug.	Sept.	Total.
<i>Dry excavation—Quantities—cubic yards.</i>									3,044			3,044				
Drilling																
Blasting																
Loading by power									\$0.1183			\$0.1183				
Tracks									.1068			.1068				
Transportation									.0610			.0610				
Dumps																
Trestles																
Pumps									.0343			.0343				
Power																
Maintenance of equipment									.0639			.0639				
Plant arbitrary																
Division expense									.0235			.0235				
Total division cost									\$0.4078			\$0.4078				
Admin. and general expense									.0433			.0433				
Total cost									\$0.4511			\$0.4511				
<i>Dredging Excavation—Quantities—cubic yards</i>					69,170	84,558	124,820	278,548								
Operation Dredges					\$0.1905	\$0.2335	\$0.1337	\$0.1781								
Repairs Dredges					.0374	.0676	.0251	.0410								
Pipe Lines					.0727	.0089	.0042	.0227								
Coffer Dams																
Dykes																
Drilling																
Blasting																
Plant Arbitrary					.2163	.1470	.1470	.1642								
Division expense					.0182	.0157	.0081	.0129								
Total Division Cost					\$0.5351	\$0.4727	\$0.3181	\$0.4189								
Admin. and Gen. Expense					.1108	.0332	.0167	.0451								
Total Cost					\$0.6459	\$0.5059	\$0.3348	\$0.4640								
<i>Preparing foundations, excavation—Quantities—cubic yards.</i>			175	175					1,094	4,866	593	6,553	5,442	6,210	3,859	15,511
Drilling									\$0.4932	\$0.1147	\$1.4343	\$0.2973	\$0.0193	\$0.0218		\$0.0155
Blasting									.1596	.0809	.1855	.1035		.0101		.0040
Loading by power			\$1.4478	\$1.4478					.1274	.0629		.0680		.0200		.0080
Loading by hand									2.1302	.3914	2.3172	.8560	2.1754	.9908	\$1.9027	1.6333
Transportation									.0928	.0356	.1471	.0553	.0018	.0316	.0079	.0153
Tracks									.2022	.1137	.3097	.1462	.0505	.0674	.3543	.1328
Dumps										.0083		.0061				
Pumps									.0341	.0198	.1134	.0307	.2033	.1915	.2814	.2180
Coffer dams																
Maintenance of equipment									.3754	.0774	.3919	.1556	.1553	.1113	.1083	.1260
Plant arbitrary													.2100	.2104	.2104	.2103
Division expense			.1287	.1287					.2094	.0684	.2177	.1054	.1756	.1173	.1447	.1446
Total division cost			\$1.5765	\$1.5765					\$3.8243	\$0.9731	\$5.1168	\$1.8241	\$2.9912	\$1.7722	\$3.0097	\$2.5078
Admin. and general expense			.1802	.1802					.4076	.1555	.6246	.2400	.2794	.1907	.2957	.2479
Total cost			\$1.7567	\$1.7567					\$4.2319	\$1.1286	\$5.7414	\$2.0641	\$3.2706	\$1.9629	\$3.3054	\$2.7557
<i>Preparing foundations, wooden piling—Quantities—lin. ft.</i>													525	5,740	5,040	11,305
Wooden piles in place													\$0.5304	\$0.1757	\$0.1529	\$0.1820
Division expense													.0394	.0121	.0085	.0117
Total division cost													\$0.5698	\$0.1878	\$0.1614	\$0.1937
Admin. and general expense													.0610	.0204	.0176	.0211
Total cost													\$0.6308	\$0.2082	\$0.1790	\$0.2148
Masonry.																
<i>Concrete—Quantities—cubic yds.</i>	1,357	1,111	976	3,444	3,735	3,222	1,926	8,883	6,142	3,911	2,384	12,437	60,857	68,184	41,178	170,219
Cement	\$1.5298	\$1.5972	\$1.5523	\$1.5579	\$2.1120	\$1.9304	\$1.5537	\$1.9251	\$1.6280	\$1.7361	\$0.5171	\$1.4491	\$1.8356	\$1.9540	\$1.6779	\$1.8449
Stone	1.9703	1.9998	1.9987	1.9879	1.7641	1.8648	1.5759	1.7598	.7347	.7163	.8091	.7431	.7335	.7161	.8091	.7448
Sand	.5925	.5382	.5914	.5747	.6832	.6920	.6947	.6889	.3243	.3149	.3194	.3204	.3238	.3149	.3196	.3192
Mixing	.7380	1.0765	1.1368	.9602	.3696	.3327	.6469	.4163	.4711	.9341	1.4618	.8066	.2631	.2395	.3177	.2669
Total cost	\$4.8306	\$5.2117	\$5.2792	\$5.0807	\$4.9289	\$4.8199	\$4.4712	\$4.7901	\$3.1581	\$3.7014	\$3.1074	\$3.3192	\$3.1560	\$3.2245	\$3.1243	\$3.1758
<i>Large Rock—Quantities—cubic yards.</i>																
Cost.																
<i>Masonry—Quantities—cubic yards.</i>	1,357	1,111	976	3,444	3,735	3,222	1,926	8,883	6,142	3,911	2,384	12,437	60,857	68,184	41,178	170,219
Concrete	\$4.8306	\$5.2117	\$5.2792	\$5.0807	\$4.9289	\$4.8199	\$4.4712	\$4.7901	\$3.1581	\$3.7014	\$3.1074	\$3.3192	\$3.1560	\$3.2245	\$3.1243	\$3.1758
Large rock																
Wood forms	1.9796	2.0555	2.6318	2.1889	.5499	.9035	1.2632	.8328	.9614	1.1600	1.3842	1.1049	.4480	.3730	.6348	.4632
Steel forms					*1542			*.0648					.0207	.0163	.0131	.0171
Placing	1.4478	1.3319	1.7725	1.5024	1.1406	.5398	2.4249	1.2012	.6885	.7368	.8696	.7384	.3337	.2713	.4230	.3303
Reinforcements	.1086		.0849	.0669												
Pumps	.0016	.0046	.0222	.0084	.0763	.0719	.1513	.0909	.0341	.0198	.1134	.0448	.0574	.0312	.0687	.0497
Power					.0820	.0840	.2233	.1133	.0076	.0095		.0067	.0311	.0275	.0373	.0311
Coffer dams																
Maintenance of equipment	1.0706	.6983	.6822	.8404	.2755	.2463	.6020	.3357	.1932	.2592	.1285	.2016	.1424	.1275	.2032	.1511
Plant arbitrary	.5340	.5340	.5340	.5340	.9380	.9377	.9380	.9380	.7000	.7000	.7000	.7000	.5400	.5407	.5408	.5405
Division expense	.4124	.3686	.4577	.4111	.2104	.3468	.4126	.3037	.1538	.1998	.2234	.1816	.0907	.0695	.0841	.0806
Total division cost	10.3852	10.2046	11.4645	10.6328	\$8.0474	\$7.9499	10.4865	\$8.5409	\$5.8967	\$6.7865	\$6.5265	\$6.2972	\$4.8200	\$4.6815	\$5.1293	\$4.8394
Admin. and general expense	1.0300	1.3218	1.2055	1.1738	.4748	.8629	1.1570	.7635	.4070	.6073	.6341	.5135	.2671	.2696	.3796	.2952
Total cost	11.4152	11.5264	12.6700	11.8066	\$8.5222	\$8.8128	11.6435	\$9.3044	\$6.3037	\$7.3938	\$7.1606	\$6.8107	\$5.0871	\$4.9511	\$5.5089	\$5.1346
<i>Masonry, reinforced—Quantities—cubic yards.</i>			112	112	224	4,358	4,164	1,236	9,758	5,340	2,103	669	8,112	5,171	7,229	17,362
Cement		\$2.2500	\$1.5536	\$1.9018	\$2.2758	\$2.2476	\$2.2391	\$2.2592	\$2.3029	\$2.3870	\$0.4016	\$2.1679	\$2.2153	\$2.4103	\$2.2594	\$2.3091
Stone		2.0003	2.0089	2.0046	2.2910	1.9081	1.4552	2.0217	.7039	.6788	.7582	.7019	.7043	.6829	.7715	.7146

*Denotes credit.

Table No. 3—(Continued)

ITEMS.	GATUN SPILLWAY.				GATUN LOCKS.				PEDRO MIGUEL LOCKS.				MIRAFLORES LOCKS.			
	July	Aug.	Sept.	Total.	July	Aug.	Sept.	Total.	July	Aug.	Sept.	Total.	July	Aug.	Sept.	Total.
<i>Masonry reinforced—Continued.</i>																
Sand.....		.5383	.5937	.5660	.6678	.5728	.5897	.6175	.3052	.2963	.3058	.3029	.3058	.2954	.3002	.2999
Mixing.....		1.0570	.6969	.8770	.5124	.4608	.4735	.4854	.5512	.6420	1.4108	.6456	.9471	.8181	1.1932	.9637
Wood forms.....		5.4806	1.4729	3.4768	2.4981	2.4280	2.7802	2.5039	1.3742	1.0134	2.5558	1.3782	4.7559	3.0989	3.2516	3.6360
Steel forms.....					.0137	.0019		.0070					.0138	*0012		.0036
Power.....					.1272	.1202	.0495	.1144	.0017			.0011	.0185	.0102	.0152	.0141
Placing.....		1.3323	1.7429	1.5376	1.0726	.9663	1.9922	1.1437	.8449	1.7149	4.4756	1.3698	1.2700	1.0622	1.2288	1.1717
Reinforcements.....		16.6386	2.5053	9.5719	.7113	.3570	1.2592	.6295	1.2214	.5124	.5649	.9835	2.1978	1.6281	2.0331	1.9135
Pumps.....									.0346	.0196	.1110	.0371	.0571	.0311	.0679	.0494
Maintenance of equipment.....		.6985	.6819	.6902	.3199	.2858	.3781	.3127	.0934	.2270	.2283	.1392	.3218	.0903	.1442	.1746
Plant arbitrary.....		.5340	.5340	.5340	.9380	.9382	.9380	.9380	.6997	.6937	.6854	.6776	.5398	.5386	.5385	.5390
Division expense.....		.5650	.4710	.5180	.4621	.3584	.4951	.4220	.2772	.3016	.5243	.3039	.5852	.3648	.3705	.4321
Total division cost.....		31.0946	12.2611	21.6779	11.8899	10.6451	12.6498	11.4559	\$8.4103	\$8.4867	12.0217	\$8.7280	13.9324	11.0297	12.1741	12.2213
Admin. and general expense.....		4.2853	1.3574	2.8213	.9891	1.0727	1.4407	1.0820	.6916	.8930	1.5217	.8122	1.1644	.9136	1.1530	1.0567
Total cost.....		35.3799	13.6185	24.4992	12.8790	11.7178	14.0905	12.5370	\$9.1019	\$9.3797	13.5434	\$9.5402	15.0968	11.9433	13.3271	13.2780
Total Masonry—Quantities—cubic yards.....	1,357	1,223	1,088	3,668	8,093	7,386	3,162	18,641	11,482	6,014	3,053	20,549	66,628	75,413	46,140	187,581
Total cost.....	11.4152	13.7108	12.7676	12.5818	10.8683	10.4505	12.6001	10.9965	\$7.6051	\$8.0882	\$8.5592	\$7.8882	\$5.8710	\$5.6213	\$6.3497	\$5.8884
Back filling—Quantities—cubic yards.....					107,216	95,904	68,299	271,419	10,184	15,411	17,296	42,891	73,076	78,689	96,812	248,577
Drilling.....					\$0.0119	\$0.0239	\$0.0340	\$0.0217								
Blasting.....					.0212	.0270	.0352	.0267								
Loading.....					.0342	.0435	.0463	.0405								
Tracks.....					.1315	.1254	.0380	.1058	\$0.1708	\$0.0684	\$0.0654	\$0.0915	\$0.1321	\$0.0787	\$0.0772	\$0.0938
Transportation.....					.1780	.1744	.0324	.1401	.0143	.0906	.0900	.0722	.0406	.0851	.0379	.0537
Filling.....					.0459	.1025	.0814	.0749	.1504	.0454	.0655	.0784	.0573	.0684	.4203	.2022
Maintenance of equipment.....					.0529	.0316	.0527	.0453	.0202	.0436	.0517	.0413	.0432	.0463	.0222	.0360
Plant arbitrary.....									.0800	.0800	.0800	.0800	.0900	.0900	.0413	.0710
Division expense.....					.0376	.0408	.0235	.0352	.0241	.0081	.0102	.0128	.0171	.0130	.0088	.0125
Total division cost.....					\$0.5132	\$0.5691	\$0.3435	\$0.4902	\$0.4598	\$0.3361	\$0.3628	\$0.3762	\$0.3803	\$0.3815	\$0.6077	\$0.4692
Admin. and general expense.....					.0448	.0570	.0553	.0518	.0414	.0273	.0301	.0318	.0262	.0251	.0188	.0230
Total cost.....					\$0.5580	\$0.6261	\$0.3988	\$0.5420	\$0.5012	\$0.3634	\$0.3929	\$0.4080	\$0.4065	\$0.4066	\$0.6265	\$0.4922
Filling center wall—Quantities—cubic yards.....					5,454	7,415	3,003	15,872	3,404	9,890	597	13,891	6,211		1,996	8,207
Loading.....					\$0.0729	\$0.0893	\$0.1394	\$0.0931								
Tracks.....					.1425	.1186	.1900	.1403	\$0.0567	\$0.0689	\$0.0987	\$0.0672				
Transportation.....					.2125	.2192	.2885	.2300	.1717	.0676	.0730	.0933	\$0.1527			\$0.1155
Filling.....					.0939	.0714	.1523	.0944	.2210	.0621	.6748	.1274	.9546		\$1.6333	\$1.1197
Power.....													.0168		.0231	.0183
Maintenance of equipment.....					.1198	.0764	.1732	.1096	.1844	.0335	.1849	.0770	.0457		.1308	.0664
Plant arbitrary.....					.2710	.2710	.2710	.2710	.0800	.0800	.0800	.0800	.0900		.0903	.0901
Division expense.....					.0388	.0351	.0411	.0376	.0302	.0090	.0472	.0158	.0324		.0881	.0460
Total division cost.....					\$0.9514	\$0.8810	\$1.2555	\$0.9760	\$0.7440	\$0.3211	\$1.1586	\$0.4607	\$1.2922		\$1.9656	\$1.4560
Admin. and general expense.....					.0414	.0396	.0566	.0434	.0573	.0313	.1271	.0418	.0488		.1805	.0808
Total cost.....					\$0.9928	\$0.9206	\$1.3121	\$1.0194	\$0.8013	\$0.3524	\$1.2857	\$0.5025	\$1.3410		\$2.1461	\$1.5368

*Denotes credit.

DRY EXCAVATION—PRISM.

Table No. 4.

Detailed cost per cubic yard for quarter ending September 30, 1912.

ITEMS.	ATLANTIC DIVISION.				CENTRAL DIVISION.				PACIFIC DIVISION.			
	July	August	Sept	Total	July	August	Sept	Total	July	August	Sept	Total.
Dry excavation—Quantities—cubic yards					1,336,366	1,094,132	922,712	3,353,210	152,555	183,570	143,008	479,133
Clearing.....					\$0.0561	\$0.0614	\$0.0620	\$0.0594	\$0.1005	\$0.1164	\$0.0488	\$0.0912
Drilling.....					.0578	.0617	.0466	.0561	.0453	.0588	.0239	.0441
Blasting.....					.0514	.0557	.0624	.0558	.1038	.0987	.1569	.1177
Loading.....					.0703	.0875	.0800	.0786	.1328	.2406	.2485	.2087
Tracks.....					.0655	.1014	.1094	.0893	.0426	.1024	.1272	.0907
Transportation..					.0486	.0589	.0548	.0536	.0001	.0179	.0166	.0118
Dumps.....					.0066	.0138	.0147	.0112	.0569	.0329	.0745	.0529
Pumps.....					.0937	.1015	.1147	.1020	.0546	.0906	.1154	.0854
Maintenance of equipment..					.0075	.0075	.0075	.0075	.0700	.0703	.0703	.0702
Plant arbitrary.....					.0134	.0187	.0115	.0146	.0271	.0283	.0304	.0285
Division expense.....												
Total division cost					\$0.4709	\$0.5681	\$0.5636	\$0.5281	\$0.6337	\$0.8569	\$0.9085	\$0.8012
Administrative and general expense..					.0227	.0351	.0406	.0317	.0423	.0572	.0750	.0578
Total cost.....					\$0.4936	\$0.6032	\$0.6042	\$0.5598	\$0.6760	\$0.9141	\$0.9835	\$0.8590

DREDGING EXCAVATION—PRISM.

Table No. 5.

Detailed cost per cubic yard for quarter ending September 30, 1912.

ITEMS.	ATLANTIC DIVISION.								PACIFIC DIVISION.							
	July.		August.		September.		Total.		July.		August.		September.		Total.	
	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.
Clearing.....	495,398	\$0.0003	429,415	\$0.0006	372,302		1,297,115	\$0.0003	198,372	\$0.0509	189,200	\$0.0526	134,130	\$0.0611	521,702	\$0.0541
Op'n seagoing suction dredge	204,419	.0467	242,365	.0397	55,556	.0284	502,340	.0413	198,373	.0059	189,200	.0066	134,130	.0342	521,702	.0134
R'rs, seagoing suction dredge	204,419	.0047	242,365	.0142	55,556	.3588	502,340	.0485	198,373	.1366	54,786	.0748	88,367	.0769	159,925	.0824
Op'n, small ladder dredges..	72,173	.1124	88,056	.0912	82,594	.0904	242,823	.0972	16,772	.0458	54,786	.0720	88,367	.1244	159,925	.0982
Repairs, small ladder dredges	72,173	.0491	88,056	.0219	82,594	.0182	242,823	.0287	16,772	.0971	105,477	.0917	105,000	.0957	284,294	.0946
Op'n, 5-yard, ladder dredge..									73,817	.0951	105,477	.0248	105,000	.0428	284,294	.0497
Repairs, 5-yard ladder dredge									18,550	.1581	17,150	.1951	10,225	.2579	45,925	.1941
Operation, dipper dredges....	13,323	.1480					13,323	.1480	18,550	.0501	17,150	.0627	10,225	.0558	45,925	.0561
Repairs, dipper dredges.....	13,323	.4966					13,323	.3992								
Operation, pipe line dredges..	205,483	.0659	98,994	.0963	234,152	.0547	538,629	.0666								
Repairs, pipe line dredges....	205,483	.0103	98,994	.0151	234,152	.0099	538,629	.0111								
Pipe lines.....	205,483	.0033	98,994	.0173	234,152	.0269	538,629	.0161								
Dykes.....									74,702		74,863		62,145	.0608	211,710	.0179
Op'n, tugs, clapets and scows	85,496	.0881	88,056	.0668	82,594	.0869	256,146	.0804	109,139	.0701	177,413	.0456	203,592	.0709	490,144	.0615
R'rs, tugs, clapets, and scows..	85,496	.1091	88,056	.0856	82,594	.0469	256,146	.0810	109,139	.0243	177,413	.0282	203,592	.0347	490,144	.0300
Drilling.....	45,116	.0627	60,089	.0474	47,836	.0384	153,041	.0491	74,702		74,863		62,145	.2370	211,710	.0696
Blasting.....	45,116	.1657	60,089	.1117	47,836	.1175	153,041	.1294	74,702		74,863		62,145	.1756	211,710	.0515
Operation, drill barges.....									74,702	.1163	74,863	.1654	62,145	.1575	211,710	.1458
Repairs, drill barges.....									74,702	.0203	74,863	.0057	62,145	.0052	211,710	.0107
Operation, rock breakers.....									74,702	.0165	74,863	.0155	62,145	.0226	211,710	.0179
Repairs, rock breakers.....									74,702	.0098	74,863	.0014	62,145	.0009	211,710	.0042
Small boats.....	495,398	.0014	429,415	.0014	372,302	.0017	1,297,115	.0015	307,511	.0048	366,613	.0035	337,722	.0067	1,011,846	.0050
Repairs, misc. equipment.....	495,398	.0015	429,415	.0014	372,302	.0014	1,297,115	.0014	307,511	.0037	366,613	.0049	337,722	.0180	1,011,846	.0089
Plant arbitrary.....	495,398	.0470	429,415	.0470	372,302	.0470	1,297,115	.0470	307,511	.0246	366,613	.0070	337,722	.0076	1,011,846	.0125
Division expense.....	495,398	.0075	429,415	.0070	372,302	.0086	1,297,115	.0076	307,511	.0062	366,613	.0045	337,722	.0096	1,011,846	.0067
Total division cost.....	495,398	\$0.2076	429,415	\$0.1925	372,302	\$0.2463	1,297,115	\$0.2137	307,511	\$0.2176	366,613	\$0.1920	337,722	\$0.3700	1,011,846	\$0.2592
Admin. and general expense	495,398	.0135	429,415	.0156	372,302	.0234	1,297,115	.0170	307,511	.0162	366,613	.0155	337,722	.0355	1,011,846	.0224
Total cost	495,398	\$0.2211	429,415	\$0.2081	372,302	\$0.2697	1,297,115	\$0.2307	307,511	\$0.2338	366,613	\$0.2075	337,722	\$0.4055	1,011,846	\$0.2816
Earth excavation—per cent...	450,282	90.89	369,326	86.01	324,466	87.15	1,144,074	88.20	232,809	75.71	291,750	79.58	275,577	81.60	800,136	79.08
Rock excavation—per cent...	45,116	9.11	60,089	13.99	47,836	12.85	153,041	11.80	74,702	24.29	74,863	20.42	62,145	18.40	211,710	20.92

STONE PRODUCTION.

Table No. 6.

Detailed cost per cubic yard for quarter ending September 30, 1912.

	ANCON QUARRY.			
	July.	August.	Sept.	Total.
Quarrying—Quantities—cubic yards.....	61,053	70,383	41,379	172,815
Stripping.....	\$0.0275	\$0.0057	\$0.0028	\$0.0127
Drilling.....	.0506	.0720	.0788	.0660
Blasting.....	.0865	.0736	.0614	.0752
Loading.....	.0448	.0374	.0627	.0461
Transportation.....	.0500	.0515	.0692	.0553
Tracks.....	.0615	.0464	.0449	.0514
Maintenance of equipment.....	.0617	.0460	.0776	.0591
Plant arbitrary.....	.1600	.1600	.1600	.1600
Total.....	\$0.5426	\$0.4926	\$0.5574	\$0.5258
Crushing—				
Operation crushers.....	\$0.0184	\$0.0184	\$0.0311	\$0.0214
Stone bins and conveyors.....	.0046	.0037	.0057	.0045
Power.....	.0166	.0182	.0223	.0186
Maintenance of equipment.....	.0285	.0163	.1142	.0441
Plant arbitrary.....	.0425	.0427	.0432	.0428
Total.....	\$0.1106	\$0.0993	\$0.2165	\$0.1314
Rail transportation to storage—				
Operation of trains.....	\$0.0275	\$0.0462	\$0.0561	\$0.0420
Repairs to tracks.....				
Dumping in storage.....	.0083	.0298	.0298	.0222
Maintenance of equipment.....	.0264	.0222	.0311	.0258
Plant arbitrary.....	.0600	.0600	.0600	.0600
Total.....	\$0.1222	\$0.1582	\$0.1770	\$0.1500
Division expense.....	\$0.0244	\$0.0186	\$0.0208	\$0.0212
Total cost in storage.....	\$0.7998	\$0.7687	\$0.9717	\$0.8284

SAND PRODUCTION.

Table No. 7.

Detailed cost per cubic yard for quarter ending September 30, 1912.

ITEMS.	GATUN.				CHAMÉ.			
	July	August.	Sept.	Total.	July.	August.	Sept.	Total.
Dredging—Quantities—cubic yards.....	30,118	2,850		32,968	51,470	49,111	39,385	139,966
Operation, dredges.....	\$0.2008	\$0.3286		\$0.2124	\$0.0703	\$0.0762	\$0.0943	\$0.0791
Maintenance of equipment.....	.0121	.0847		.0183	.1489	.0272	.0223	.0706
Total.....	\$0.2129	\$0.4133		\$0.2307	\$0.2192	\$0.1034	\$0.1166	\$0.1497
Plant arbitrary.....					\$0.0100	\$0.0100	\$0.0100	\$0.0100
Total cost of production.....	\$0.2129	\$0.4133		\$0.2307	\$0.2292	\$0.1134	\$0.1266	\$0.1597
Towing—Quantities—cubic yards.....	20,520	2,850		23,370	51,470	49,111	39,385	139,966
Operation, tugs and barges.....	\$0.0770	\$0.2571		\$0.1198	\$0.1009	\$0.1028	\$0.1341	\$0.1109
Maintenance of equipment.....	.0012	.0228		.0041	.0783	.0560	.0446	.0610
Plant arbitrary.....					.0200	.0200	.0200	.0200
Total.....	\$0.0782	\$0.2799		\$0.1239	\$0.1992	\$0.1788	\$0.1987	\$0.1919
Unloading—Quantities—cubic yards.....	20,520	2,850		23,370	50,470	48,611	38,985	138,066
Operation, cableways and cranes.....	\$0.0748	\$0.0509		\$0.0938	\$0.0618	\$0.0808	\$0.0924	\$0.0771
Power.....	.0262	.0102		.0277	.0147	.0151	.0204	.0164
Maintenance of equipment.....	.0493	.0223		.0503	.0275	.0312	.1084	.0517
Plant arbitrary.....					.0515	.0511	.0513	.0513
Total.....	\$0.1503	\$0.0834		\$0.1718	\$0.1555	\$0.1782	\$0.2725	\$0.1965
Rail Transportation to Storage—Quantities—cubic yards.....	1,010	380		1,390	50,470	48,611	38,985	138,066
Operation of cranes.....	\$0.2373	\$0.1038		\$0.2008				
Operation of trains.....	.0825	.0602		.0764	\$0.0243	\$0.0440	\$0.0512	\$0.0388
Repairs to tracks.....					.0506	.0092	.0013	.0221
Dumping in storage.....					.0103	.0085	.0127	.0103
Maintenance of equipment.....	.2088	.6623		.3635	.0238	.0227	.0296	.0251
Plant arbitrary.....					.0400	.0400	.0400	.0400
Total.....	\$0.5286	\$0.8263		\$0.6407	\$0.1490	\$0.1244	\$0.1348	\$0.1363
Division expense.....	\$0.0154	\$0.0539		\$0.0187	\$0.0156	\$0.0106	\$0.0097	\$0.0122
Total cost in storage.....	\$0.4017	\$0.9407		\$0.4860	\$0.7485	\$0.6054	\$0.7423	\$0.6966

HYDRAULIC EXCAVATION—PRISM.

Table No. 8.

Detailed cost per cubic yard for quarter ending September 30, 1912.

ITEMS.	ATLANTIC DIVISION.				PACIFIC DIVISION.			
	July	August	Sept.	Total	July	August	Sept.	Total
Quantities—cubic yards					85,000	75,031	117,337	277,368
Clearing.....								
Drilling.....								
Blasting.....								
Pumping station.....					\$0.0620	\$0.0800	\$0.0387	\$0.0570
Pipe lines and monitors.....					.0963	.0233	.0136	.0415
Dredging pumps.....					.0417	.0439	.0206	.0334
Relay pumps.....								
Dykes.....					.0260	.0126	.0107	.0159
Maintenance of equipment.....					.0702	.1201	.0384	.0703
Power.....					.0811	.1063	.0668	.0819
Plant arbitrary.....					.7161	.7146	.7129	.7144
Division expense.....					.0135	.0122	.0057	.0098
Total division cost.....					\$1.1069	\$1.1130	\$0.9074	\$1.0242
Administrative and general expenses.....					.0254	.0248	.0128	.0199
Total cost.....					\$1.1323	\$1.1378	\$0.9202	\$1.0441

COLON BREAKWATER.

Table No. 9.

ITEMS.	COLON BREAKWATER.				ITEMS.	COLON BREAKWATER—Cont'd.			
	July.	Aug.	Sept.	Total.		July	Aug.	Sept.	Total
Porto Bello Large Rock.					Porto Bello Large Rock—Continued.				
Quarrying—Quantities—Cubic yards	8,678	9,332	8,711	26,721	Placing—				
Stripping.....	\$0.7505	\$0.5348	\$0.7437	\$0.6730	Operation of floating derricks.....	\$0.2066	\$0.3371	\$0.2857	\$0.2780
Drilling.....	.1841	.1521	.1817	.1721	Maintenance, floating derricks.....	.0263	.0867	.0859	.0668
Blasting.....	.3739	.3145	.3929	.3593	Operation, cranes.....	.1824	.1688	.1844	.1783
Loading.....	.1888	.1804	.1723	.1805	Operation, trains.....	.0855	.1008	.0878	.0916
Transportation.....	.1833	.2009	.1391	.1751	Dumping.....	.0912	.0172	.0160	.0408
Tracks.....	.4540	.4756	.0818	.3402	Maintenance of equipment.....	.1935	.1415	.2154	.1825
Loading on barges.....	.1848	.2791	.7127	.3898	Plant arbitrary.....	.1641	.1640	.1640	.1640
Power.....	.1919	.1755	.1891	.1853	Total.....	\$0.9496	\$1.0161	\$1.0392	\$1.0020
Maintenance of equipment.....	.4028	.8846	.6824	.6622	Trestles.....	.7612	.3911	.2293	.4585
Plant arbitrary.....	.3010	.3010	.3010	.3010	Tug service, miscellaneous.....		.2006	.1569	.1674
Total.....	\$3.2151	\$3.4985	\$3.5967	\$3.4385	Maintenance of equipment, miscellaneous.....		.0390	.0569	.0528
Towing—					Division expense.....	.3490	.3303	.3161	.3317
Operation, tugs and barges.....	\$0.6324	\$0.3720	\$0.4687	\$0.4419	Total division cost.....	\$6.5844	\$6.4669	\$6.4867	\$6.5115
Maintenance of equipment.....	.2731	.2153	.2189	.2147	Administrative and general expense.....	.4688	.6340	.6422	.5830
Plant arbitrary.....	.4040	.4040	.4040	.4040	Total cost, large rock.....	\$7.0532	\$7.1009	\$7.1289	\$7.0945
Total.....	\$1.3095	\$0.9913	\$1.0916	\$1.0606					

PERMANENT POWER HOUSE—GATUN.

Table No. 10.

	July.	August.	Sept.	Total.
Dry Excavation—Quantities—Cubic yards	14,948			14,948
Clearing.....				
Drilling.....	\$0.0150			\$0.0150
Blasting.....	.0136			.0136
Loading.....	.0414			.0414
Tracks.....	.1823			.1823
Transportation.....	.0589			.0589
Maintenance of equipment.....	.0351			.0351
Plant arbitrary.....	.0237			.0237
Division expense.....				
Total Division cost.....	\$0.3700			\$0.3700
Administration and General expense.....	.0318			.0318
Total cost.....	\$0.4018			\$0.4018
Preparing Foundations—Quantities—cubic yards	3,809	1,974	850	6,633
Drilling.....	\$0.0221	\$0.1436	\$0.0807	\$0.0531
Blasting.....	.0446	.0123	.0198	.0189
Loading by power.....	.3040	.3720	.2172	.1642
Loading by hand.....	.0417	.6422	1.3086	.5334
Tracks.....		.0950	.2138	.0796
Transportation.....				
Maintenance of equipment.....	.0218	.1024	.1540	.0627
Plant Arbitrary.....	.0415	.1244	.1609	.0814
Division expense.....				
Total division cost.....	\$0.4757	\$1.4919	\$2.1550	\$0.9933
Administrative and general expenses.....	.0480	.1448	.2361	.1009
Total cost.....	\$0.5237	\$1.6367	\$2.3911	\$1.0942
Masonry Substructure—Quantities—cubic yards	196			196
Cement.....	\$1.5306			\$1.5306
Stone.....	1.9682			1.9682
Sand.....	.5918			.5918
Forms.....	.0958			.4525
Mixing.....	.7379			.7379
Placing.....	1.2774			2.8719
Maintenance of equipment.....	1.0939			1.1218
Plant arbitrary.....	.5340			.5340
Division expense.....	.2578			.4472
Total division cost.....	\$8.0874			\$10.2559
Administrative and general expenses.....	.2754			.4963
Total cost.....	\$8.3628			\$10.7522

CANAL



RECORD

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THE CANAL RECORD,

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Isthmus of Panama.

No communication, either for publication, or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission for the month of October is published in full in this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Dredge No. 85 in Pacific Harbor.

Pipeline suction dredge No. 85, which was dismantled and transferred from the south side of Gatun Dam to the Pacific entrance, began excavating in the inner harbor basin, west of the site of the proposed piers, on November 18. The first section of the hull was laid on the Balboa shipways for reassembling on August 9; the dredge was launched on September 30, and on October 26, steam was raised and the machinery turned over. Since that date the new superstructure was completed, and a few days' delay was occasioned by the laying of the 2,200-foot pipeline through which it is discharging. The spoil from its excavation is to be used in filling a swamp along the Curundú River, bounded by Diablo Hill, the main line of the Panama railroad, the Balboa branch of the railroad, and the yards in the rear of the new piers.

Guard Gates at Pedro Miguel Lock Swung.

On Friday, November 15, the operating mechanism was finally adjusted, and on the following day, Saturday, November 16, the upper guard gates in the east chamber of the Pedro Miguel lock, Nos. 50 and 51, fifty-four feet eight inches high, were successfully swung. The operation of the gates from the closed to the open position occupied less than two minutes. The gates were set in motion by an operating switch thrown by the little son of Congressman John J. Fitzgerald, who accompanied his parents to the Isthmus. It is expected that the two guard gates in the west chamber, Nos. 52 and 53, will be completed and in readiness for testing within another month.

The adjustment of the wood sills and miter posts on the upper guard gates remains to

be done, and the painting; also, the erection of the foot walks and movable handrails and the mechanism for operating same.

The miter gate operating machinery was installed on the leaves in the east chamber on the 9th and 13th instant, respectively.

As soon as the leaves have been tested for watertightness, both gates will be closed, so that in case a freshet occurs of such magnitude as to overtop the temporary dam now across the north end of Culebra Cut at Gamboa, allowing the water to rush through the Cut and extend as far as the Pedro Miguel locks, the upper guard gates will serve as a barrier and prevent the flooding of these locks.

During the past two months, the white force of workmen in the employ of the contractors for the lock gates has been largely increased to expedite the work on these gates.

Washout on Cristobal Terminal Breakwater Fill.

High winds have prevailed on the Atlantic Coast during the past week. On Thursday and Friday, there was an unusually heavy sea in Limon Bay, which broke against the breakwater at the Cristobal terminal dock with such force as to carry away the fill for a distance of about 200 feet, and a width of from 8 to 12 feet. The trestle, extending out beyond the present fill for a distance of several hundred feet, which was subjected to the brunt of the waves, was thrown out of alignment, and the caps and railroad track were almost entirely swept off. Dumping, to fill in the section washed out, has already been begun.

Completion of Wet Excavation at Gatun Locks.

The pipeline suction dredge, which has been excavating in the lagoon at the lower end of Gatun Locks, for the foundations of the flare and approach walls, has pumped the lagoon practically dry, and now rests on the ground, fifty-five feet below the level of the sea. In the latter stages of the excavation, the dipper dredge Chagres was withdrawn, and pipeline suction dredge No. 4 was taken out for work in the entrance channel, its place in the lagoon being taken by No. 83, which is equally effective for pumping. The evacuation of the lagoon discloses that the excavation has been unexpectedly complete, reaching a part of the bases for the walls, and cleaning out parts of the two approaches well below the level of the sill at the end of the lower lock, at elevation 44 to 50. A quantity of mud is being sluiced from the sill, at the foot of the coffer dam protecting the locks, and from the locks to a sump, by the dredge which pumps it out. For the sluicing, water is supplied from the Gatun system, at a pressure of 150 pounds to the square inch. With the pumping out of the lagoon, a great many fish were disclosed, the larger of which, with a 7-foot alligator, were trapped from the sea, while it is believed that smaller fish may have been drawn in through the 16-inch centrifugal

pump, by which the elevation of the water in the lagoon was regulated.

Four piledrivers are to be erected at the base of the lower end of the center wall, and will drive untreated piles for supporting the approach wall. A hopper, with flume, has been set up on the backfill of the east wall of the lower lock, and concrete for part of the east flare wall will be supplied through it by one of the duplex cableways, and narrow gage locomotives drawing dump cars.

Prevention Against Flooding at Pedro Miguel Lock.

A board, consisting of Messrs. John M. G. Watt, Henry Goldmark, and M. W. Tenny, appointed to investigate and recommend the most suitable method of keeping the lock chambers at Pedro Miguel unwatered to the bottom of the side wall culverts, has reported, in substance, as follows:

The west chamber and side wall culverts, the board believes, are amply protected against floods by an earth dam built on the chain fender sill in the lower approach to the lock, the crest of which is at elevation 20 feet above mean sealevel. The outlet from the culvert in the middle wall, through which the drainage from the Central Division is carried, has recently been strengthened to its junction with this dam, as has also the bulkhead at the outlet from the center wall to the east chamber.

The board recommends that the east chamber be protected by a similar dam to be built below the chain fender, the crest of which should be at the same elevation as the present dam. While under ordinary conditions, the east chamber will be at all times free of water, high water in the Pedro Miguel River, or Rio Grande, if concurring with the spring tides, will be quite likely to flood the chamber. Similar conditions are also likely at this season of the year, as the result of heavy rains over the watersheds of the above streams. In view of the serious delay that might be occasioned in the erection of the lock gates, through flooding, as well as the installation of the valves in the side walls, and the machine work in the upper operating gates of the lock, which is to be begun shortly, the committee recommends that the construction of this dam be started at once.

A statement, showing the number of times the chambers of the Pedro Miguel lock have been flooded during the present year, and the highest elevation reached by the water in each instance, follows:

WEST CHAMBER.		HEIGHT.
DATE.		Feet.
May 13 to May 16, 1912		plus 14 50
August 19 to August 25, 1912		plus 17 50
September 16 to October 2, 1912		plus 20 00
October 23 to October 28, 1912		plus 19 00
EAST CHAMBER.		
September 27 to October 4, 1912		plus 20 00
October 23 to October 30, 1912		plus 19 00

During the night of September 16, the wooden flume on the west side of the center

NOTES OF PROGRESS.

(Continued.)

wall broke, flooding the west chamber, and from October 2 to October 10, the elevation of the water in the chamber varied between plus 11 and plus 15 feet.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 92 per cent completed, 208,390 cubic yards, out of a total of 225,000, having been placed at the close of work on November

16. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete laid.	Hours worked.	No. mixers used.
	Cu. Yds.		
November 11.....	42	6.25	1
November 12.....	72	8.00	1
November 13.....	72	7.75	1
November 14.....	62	8.00	1
November 15.....	48	4.75	1
November 16.....	56	6.00	1
Total.....	352	40.75	1
Previously reported...	208,038		
Grand total.....	208,390		

CONCRETE WORK IN THE LOCKS.

Over 94 per cent of the concrete for the locks is in place, the amount at the close of work on November 16 being 4,106,183 cubic yards, out of a total of approximately 4,352,563. A total of 10,014 cubic yards of concrete was laid in the locks during the week ending November 16.

GATUN LOCKS.

Over 92 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on November 16 being 1,904,108 cubic yards, out of a total of 2,050,000. A statement of the amount of concrete placed in the locks each working day of the week ending November 16, and of the total, follows; and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed	Hours worked	No. of mixers	Concrete placed	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.				
November 11	62	1.04	2					62
November 12	104	1.74	2					104
November 13	40	0.66	2					40
November 14	328	5.46	2					328
November 15	338	5.64	2					338
November 16	272	4.54	2					272
Total	1,144	19.08	2					1,144
Previously reported								1,902,964
Grand total								1,904,108

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 99 per cent completed, 889,763 cubic yards, out of a total of 889,827, bucket measurement, having been placed at the close of work on November 16. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			1-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
November 11.....				Cu. Yds. 217	24.00	4	Cu. Yds.	Cu. Yds.	Cu. Yds. 217
November 12.....				356	33.50	5			356
November 13.....				271	27.75	4	16		287
November 14.....				298	30.50	4	23		321
November 15.....				305	31.50	4	18		323
November 16.....				401	44.00	5	8		409
Total				1,848	191.25	4.33	65		1,913
Previously reported.....								4,493	887,850
Grand total.....								4,493	889,763

MIRAFLORES LOCKS.

Over 92 per cent of the concrete for the system of two twin locks at Miraflores was in place November 16, the total amount on that date being 1,312,312 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.									Mixed by hand	Large stone	Total.
				2-cubic yard mixers.			1-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.						Cu. Yds.			Cu. Yds.			Cu. Yds.		Cu. Yds.
November 11.....	908	16.50	6				113	5.50	2	83	11.00	3	12	.....	1,116
November 12.....	542	11.67	4							140	19.00	3	.....	.....	682
November 13.....	520	10.00	2							130	17.50	3	.....	.....	650
November 14.....	1,016	27.00	6							191	26.00	3	.....	.....	1,207
November 15.....	1,618	32.67	7							172	21.00	3	14	.....	1,804
November 16.....	1,324	29.34	8							135	17.50	2	39	.....	1,498
Total.....	5,928	127.18	5.5				113	5.50	.33	851	112.00	2.83	65	.....	6,957
Previously reported.....														3,693	1,305,355
Grand total.....														3,693	1,312,312

SOCIAL LIFE OF THE ZONE.

Club Notes—Miscellaneous Events.

The Masonic Club of Pedro Miguel held its semiannual card party in the social hall on Saturday evening, November 16. This event was given in compliment to the members of the families of the club members.

The "Five Hundred" Club, the woman's card club at Pedro Miguel, met at the home of Mrs. Downs on Wednesday evening, November 13. This is the only organization of women in the village. It is composed principally of members of the Pedro Miguel Woman's Club, which was disbanded in 1911.

The Ancon Study Club has completed the reading of five of Shakespeare's plays, and will continue this work for the present. The meetings are well attended. The library is patronized by nonmembers, as well as members of the club. Nonmembers may take books out upon application to the librarian without charge. Books thus taken are signed for, and the borrower is charged for the price of the book, in case of failure to return same.

The Empire Woman's Club held a meeting at the Commission clubhouse on Tuesday afternoon, November 19.

The annual Hallowe'en party, under the auspices of the Cristobal Sunday school, was held on November 1. The juniors, or those under 12 years old, were entertained in the chapel, and older pupils were entertained in the lodge room in building No. 1.

On Saturday evening, November 16, an entertainment was held in the parish house of St. Ferdinand's Church, Empire. This was a jubilee occasion to celebrate the completion of improvements and repairs to the building. There will be a Christmas bazaar in the parish house on December 13, 14, and 15.

Church Notes.

The present studies of the Gatun Mission study circle consists of lessons from the book, "Western Women in Eastern Lands." The outline for the coming year has been made, and orders placed for study books in foreign and domestic mission fields. For the former, "China's New Day" will be used, and for the latter, "Mormonism—The Islam of America" will be studied. An additional order for 20 books has been placed with a New York firm, which will be the nucleus of a missionary library. The Gatun circle has expressed a wish to hold a second missionary convention, following the line of that held at

Empire on October 25. A date will be decided upon later, to be fixed, probably, in April.

The Ladies' Aid Society in connection with the Cristobal Union Church has elected Mrs. Charles Butters president for the present term. At the meeting of the society on November 12, an address was made by Miss Annie Coope on her work among the Carib Indians of Venezuela. There were about 30 women present.

The Cristobal Sunday school has exceeded its own record in the matter of enrollment and attendance. On Sunday, November 10, there was an attendance of 169, the largest in the history of the school. Owing to the congestion in the church, the officers have removed a number of the Sunday school classes to the District Court room. These pupils meet in the church for the opening exercises, and adjourn to the court room for their lesson class work. Mrs. Jarboe is the superintendent for this section of the work.

In connection with the social extension work of the church, the boys' handicraft classes, and the class in English for Chinamen and physical culture, are meeting three times a week, with an attendance of about 20 at each session. This was an experimental effort introduced a few months ago, and has met with success.

Thanksgiving Day will be celebrated at the Baptist church in Colon on November 28, at 7 p. m., and on the same evening, a special service will be held in the Baptist church at New Gatun. The Rev. J. H. Wise, the superintendent of the Baptist mission, will speak.

PERSONAL.

Mr. John M. G. Watt, Assistant Division Engineer in the Pacific Division, has resigned, effective Wednesday, November 20, and will sail for New Orleans on the United Fruit Company's steamer *Atenas*, which is due to leave Colon on November 28.

Mr. A. S. Zinn, accompanied by his wife and son, returned from leave of absence on the *Allianca*, which arrived at Cristobal on Thursday, November 14.

Arrival of the Secretary of War, and Party.

The Honorable Henry L. Stimson, Secretary of War, accompanied by Mrs. Stimson, and Miss Helen Taft, daughter of the President, arrived on the United Fruit Company's steamer *Zacapa*, which docked at Colon on Wednesday afternoon, November 20.

Sigma Nu Fraternity.

Members of the Sigma Nu fraternity, resident on the Isthmus, are invited to a dinner to be given at the University Club on Saturday, November 23. Any who are not in touch with their society in Panama are requested to write or telephone to Mr. René Granger, Gatun.

Boxer Sentenced.

Charles W. Boxer was arraigned in the Circuit Court at Ancon on November 18, on the charge of embezzlement. He pleaded guilty, and was sentenced by Justice Jackson to a term of one year in the Canal Zone penitentiary.

Sailing of the "Cristobal."

The sailing date for the steamer *Cristobal* has been set for Thursday, November 21, at 3 p. m., from pier No. 11, Cristobal.

CANAL WORK IN OCTOBER.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., November 12, 1912.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of October, 1912:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

ITEM.	Unit	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry.....	Cubic yards..	1,701	1,113,420	251,001	1,395,644
Work excavation, wet.....	Cubic yards..	678,761		488,786	1,167,547
Total work excavation.....	Cubic yards..	680,461	1,113,420	773,290	2,567,171
Plant excavation, dry.....	Cubic yards..		6,427		6,427
Plant excavation, wet.....	Cubic yards..			11,225	11,225
Total plant excavation.....	Cubic yards..		6,427	11,225	17,652
Total Canal excavation.....	Cubic yards..	680,461	1,119,847	784,515	2,584,823
Material placed in dams.....	Cubic yards..	258,004		73,532	332,531
Concrete placed in locks and dams.....	Cubic yards..	4,809		61,417	66,286
Explosives used.....	Tons (Gross)...	73.48	150.63	106.29	330.40
Rock drilled.....	Feet.....	27,137	509,534	118,807	555,528
Tracks removed.....	Miles.....		7.35		7.35
New tracks laid.....	Miles.....	2.36	13.32	6.47	22.15
Rock crushed.....	Cubic yards.....			61,604	61,604
Cement used.....	Barrels.....	10,257	1	62,744	73,002
New roads built.....	Miles.....				
Water mains laid.....	Feet.....	1,145	256		1,401
Sewers laid.....	Feet.....	866	845		1,711
Open drains and ditches dug.....	Feet.....	12,415	56,218	3,463	72,096
Average daily force.....		4,602	6,730	7,824	19,156
Average rainfall.....	Inches.....	16.08	13.49	13.12	14.01

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the division engineers and the erection subdivision of this office, the inspection of this work being cared for by the masonry and lock structures subdivision. This subdivision is also charged with general inspection of masonry work of all the locks.

INSPECTION OF INSTALLATION OF RISING STEM GATE VALVES, ERECTION OF SPILLWAY GATES AND CAISSONS, AND ASSEMBLY OF HYDRO-ELECTRIC DRAFT TUBES AT GATUN.

The work of preparing rising stem gate valve chambers and installation of valves, and erection of Spillway gates, has progressed satisfactorily during the month.

No work has yet been done on the erection of the caissons.

Some work has been done on assembly and riveting of draft tubes for the hydroelectric station.

LOCK GATES AND PROTECTIVE DEVICES.

Up to the 20th of October, a total of 59,537 tons of steel plates and shapes had been accepted at the rolling mills. In the above tonnage is included 1,414 tons on replace orders, and 1,338 tons for spare parts, making a total of 56,785 tons rolled on the original order for 92 leaves. A total of 47,040 tons of riveted structural steel has been shipped from the Rankin shops, or about 92 per cent of the total contract weight of this class. The total tonnage of lock gate material erected to November 1, 1912, in the different locks, without regard to its being fully reamed or riveted, was 31,328 tons, out of a total of 58,000 tons, or about 54 per cent. Of this, 4,098 tons, or about seven per cent of the

total, were erected during the month of October. The number of field rivets driven was 1,895,470, or about 35 per cent of the total, of which 325,859 rivets, or about six per cent of the total, were driven during October. The tonnage erected was about 94 per cent greater, and the number of rivets driven 65 per cent greater, than the corresponding quantities for the preceding month. The status of the work in the several locks may be summarized, as follows:

Gatun—Work is in progress on all the leaves, 40 in number. The status of the work is, as follows: Erection, 66 per cent completed;

reaming, 60 per cent completed; riveting, 48 per cent completed; finishing, 10 per cent completed.

Pedro Miguel—Work is in progress on the entire 24 leaves. The status of the work is, as follows: Erection, 77 per cent completed; reaming, 61 per cent completed; riveting, 55 per cent completed. No gates are finished.

Miraflores—Work is in progress on eight, out of a total of 28 leaves, the status being, as follows: Erection, 15 per cent completed; reaming, 10 per cent completed; riveting, 16 per cent completed. No gates are finished.

LOCK GATE RECESS COVERS.

At Gatun, all covers are in place, except for the castings, while at Pedro Miguel two remain to be aligned and grouted. At Miraflores, 16 covers have been delivered, out of a total of 24. Twelve were erected and riveted, but not aligned and grouted.

CHAIN FENDERS.

All material for the first chain fender, No. 812-813, except a part of the piping, was shipped on October 20. The material for all hawsepipe castings has been shipped. The two operating pumps for the sample chain fender have been received on the Isthmus, but not the motors. The piping was to have been shipped complete by October 30. The erection of the first chain fender was continued, the erection of machine No. 813 being entirely completed, and that of No. 812 completed, with the exception of a few minor parts. The auxiliary equipment, including the piping, pumps, electrical apparatus, etc., has not been erected. The chain for this fender has been completely put in place.

INSPECTION AND ERECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection of the oper-

ating machinery and electrical equipment. As stated in last month's report, the contractors are generally behindhand in their rate of delivery. During the month, a conference was held at the office of one of the principal contractors, and it is anticipated that the rate of delivery will increase. The rate of installing the machines keeps pace with the receipt of the various parts, but necessarily some parts cannot be installed until certain others have been received. This results in a great many machines being partially installed. The force on electrical work is not being recruited as fast as the proposed schedule, on account of the late deliveries of the electrical material. The following tabulations are given as a summary of the work.

RIISING SIEM GATE VALVES.

	Gatun—56		Pedro Miguel—24	
	*Assembled	Placed.	Assembled.	Placed.
During mo.	3	8	7	7
To date...	11	20	10	7

*Valves assembled with seals after being placed

FIXED IRONS AND TRACKS FOR RIISING SIEM GATE VALVES.

	Gatun—112		Pedro Miguel—48	
	Partially installed.	Installed.	Partially installed.	Installed.
During mo.	33	0	4	4
To date...	41	18	4	4

GUARD VALVES.

	Gatun—6		Pedro Miguel—6	
	Assembled.	Placed.	Assembled.	Placed.
During mo.	6			
To date...	6			

RIISING SIEM GATE VALVE MACHINES.

	Gatun—56.		
	Received.	Partially installed.	Installed.
During month.....	8	4	3
To date.....	29	21	11

	Pedro Miguel—24		
	Received.	Partially installed.	Installed.
During month.....	0	6	6
To date.....	24	16	6

RACK TRACK. (In one-foot units.)

	Gatun—21,945 feet.			
	Dist.	Track laid.	Frozen.	Completed
During month.....	3,510	3,058	3,007	3,550
To date.....	16,127	15,666	14,615	7,470

	Pedro Miguel—13,213 feet.			
	Dist.	Track laid.	Frozen.	Completed.
During month.....	237	1,137	175	175
To date.....	7,857	7,857	5,995	5,701

CYLINDRICAL VALVE MACHINES.

	Gatun—60.		
	Received.	Partially installed.	Installed.
During month.....	1	20	17
To date.....	41	40	20

	Pedro Miguel—20.*		
	Received.	Partially installed.	Installed.
During month.....	6	14	14
To date.....	20	6	14

*Except motors.
Eleven machines received during month for Miraflores. Total, 20 to date.

AUXILIARY CULVERT VALVE MACHINES.

	Gatun—4.		
	Received.	Partially installed.	Installed.
During month.....			
To date.....	4	4	

	Pedro Miguel—4.		
	Received.	Partially installed.	Installed.
During month.....	2	2	
To date.....	4	2	

Two machines received during month for Miraflores.

MITER GATE MOVING MACHINES.

	Gatun—40.		
	Received.	Partially installed.	Installed.
During month.....	1 comp.		
To date.....	3 comp.	10	2

	Pedro Miguel—24.		
	Received.	Partially installed.	Installed.
During month.....	0 comp.	12	
To date.....	0 comp.	12	

MITER FORCING MACHINES.

	Gatun—20.		
	Received.	Partially installed.	Installed.
During month.....			
To date.....	1		1

	Pedro Miguel—12.		
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

MITER GATE RECESS COVERS.

	Gatun.		
	Placed.	Frozen.	Completed.
During month.....		2	1
To date.....	36	19	6

	Pedro Miguel.		
	Placed.	Frozen.	Completed.
During month.....	12	10	
To date.....	12	10	

	Miraflores.		
	Placed.	Frozen.	Completed.
During month.....			
To date.....			

ELECTRICAL WORK—ATLANTIC DIVISION.

Conductor rails, insulators, brackets, and cover plates were installed on 3,150 feet of straight track, and 434 feet of curved track, a total of 3,584 feet, making a total to date of 7,109 feet. Of this, 3,910 feet have been equipped with steel conductor bar, and 3,199 feet with copper conductor bar. All brackets for cover plates for the conductor slot have been corrected in dies at the Empire shops and have been returned to the lock site. Progress has been made in pulling cable into the conduit system, a total of 26,563 feet having been pulled to date. The cable pulling work has been handicapped somewhat by non-receipt of the multiple conductor control cable. All of the cable that has been pulled in the east side wall of the upper lock has been covered with tile in the manholes. Repairs and changes required on the temporary light and power system have been made as required during the month.

ELECTRICAL WORK—PACIFIC DIVISION.

A total of 43,956 duct feet of vitrified tile conduit has been cleaned and strung with

fish wire, preparatory to pulling cable; 3,542 duct feet of fibre conduit have been installed in the north approach wall. At Pedro Miguel, the temporary light and power system has been maintained, altered, and extended as required by the progress of the work. At Miraflores, transformers have been installed, and a portion of the wiring done for supplying temporary light and power for the erection operations of the First Division.

EMERGENCY DAMS.

Inspection has been in progress in the United States at five localities, and 520 tons of material were accepted during the month. Up to the end of the month, a total of 5,759 tons has been fabricated and accepted. About seven tons of material have been delivered on the Isthmus during the month, and about 556 tons erected. Up to the end of the month, a total of 3,562 tons had been delivered, and 1,737 tons erected. Work has been in progress on one dam.

AIDS TO NAVIGATION.

During the month, work on the erection of range towers Nos. 7, 9, and 11 in the Gatun Lake section was in progress; also, the erection of beacon No. 5, Pacific Division, the erection of electric light line, and making the necessary surveys and reconnaissances. The following was the condition of the work on October 31:

Ten range towers of the Atlantic and Pacific Division type, and five range towers of the Gatun Lake section type, have been completed, except for placing certain fittings and the permanent lights. The excavation for one range tower of the Gatun Lake section type is completed, and 50 per cent of the material is on the site. One foundation for the Atlantic and Pacific Division type of tower has been completed, and one caisson foundation for same type of tower has been sunk to bed rock. Three skeleton tower beacons for the Pacific Division, and their foundations, have been completed, except for installing the lights. The caisson for the west breakwaterlight has been completed up to a height of 25 feet, and has been sunk at the inner end of Limon Bay in 20 feet of water, where it will remain temporarily until its riprap foundation at the outer end of the west breakwater has been completed. Fifty-five reinforced concrete beacons have been cast in readiness for setting up. There were also cast and completed one hundred and nineteen 48 by 48 by 26-inch concrete sinkers for gas buoys, and one hundred and five 24 by 24 by 18-inch concrete sinkers for spar buoys. Seventeen concrete foundations for the electric light line from the Aguadulce pumping station on range No. 1-2, and beacons Nos. 5 and 7, Pacific Division, were in place; 18 "dead men" were set, and 14 poles were erected.

Atlantic Division.

GATUN LOCKS.

Excavation—During the month, excavation for the locks backfill was carried on by one steamshovel.

Backfill—Backfilling behind the side and center walls of the locks was continued, the quantity placed during the month aggregating 16,794 cubic yards. The total placed to November 1, 1912, amounted to 1,853,084 cubic yards. The work is now 90.27 per cent completed.

Receiving and issuing material—The issues of sand exceeded the receipts by 1,534 cubic

yards. The issues of rock amounted to 3,446 cubic yards, no rock being received. There were 8,318 barrels of cement issued; none was received.

Mixing and placing plants—Plant No. 1 and the portable mixer were kept in satisfactory operation during the month.

Concrete work—A total of 3,252 cubic yards of concrete was placed. On November 1, the concrete work to be done by this division was 92.52 per cent completed.

OPERATION OF CONCRETE CONSTRUCTION PLANT.	
Length of working day (hours).....	9.00
Average number of hours per day worked per strand of cableway laying concrete (actual working time).....	2.23
Average number of mixers per day.....	1.81
Average hourly output per mixer (actual working time) cubic yards.....	27.48
Average amount of concrete laid per hour, per strand of cableway (actual working time) cubic yards.....	12.49
Concrete laid (cubic yards) cableways.....	2,881
Concrete laid (cubic yards) derricks.....	17
Concrete laid (cubic yards) portable mixers.....	127
Concrete laid (cubic yards) hand mixers.....	227

Total amount of concrete laid (cubic yards) 3,252

GATUN DAM.

Construction during the month increased the total fill, as determined by cross section of the material in place deposited during the month, by 258,999 cubic yards, making the total amount in place 20,741,350 cubic yards. On November 1, the Dam was 95.6 per cent completed.

Hydraulic fill—There was no increase made in the hydraulic fill, the total in place remaining at 10,124,082 cubic yards.

Dry fill—Allowing an arbitrary reduction of 50,000 cubic yards to cover slow consolidation in slopes not cross sectioned, the material received from steamshovels, amounting to 258,999 cubic yards, was placed on the north and south toes of the Dam, east and west of the Spillway, making the total dry fill in place 10,617,268 cubic yards. Cross section of the month's dry fill shows a loss of $1\frac{1}{4}$ per cent from car measurement.

Hydroelectric plant—During the month, 1,700 cubic yards of earth and rock were removed by hand and crane in the preparation of foundations, making a total excavation of 95,399 cubic yards. Twelve cubic yards of concrete were placed, making the total to date 208 cubic yards.

GATUN SPILLWAY.

Backfill—There was no backfilling done behind the Spillway walls, the total on October 31 remaining at 16,495 cubic yards.

Concrete—A total of 1,617 cubic yards of concrete, of which 314 cubic yards were reinforced, was laid during the month. Concrete work for the Spillway was 92.31 per cent completed.

Excavation—There was no excavation done during the month, the total remaining at 1,591,261 cubic yards.

HARBOR AND CHANNEL SECTION.

Dredging from the ocean to Mindi—Seven dredges removed 519,555 cubic yards of earth and 53,228 cubic yards of rock from the Canal prism. In addition, the dredge *Mindi* removed 34,248 cubic yards of coral from between docks Nos. 16 and 17, Panama Railroad Company's Cristobal terminal docks. On October 31, 1912, forty feet of water could be carried from zero to zero plus 2,100 feet, 35 feet to mile post 4 plus 3,600 feet, 30 feet to mile post 5 plus 2,200 feet, 20 feet to mile post 6 plus 1,900 feet, 10 feet to mile post 6 plus 2,800 feet. The *Terrier* drilled 4,753 feet, used 31,585 pounds of dynamite, and shot

14,700 cubic yards of earth and 38,752 cubic yards of rock to minus 45 feet mean sealevel.

Dredging in approach to Gatun Locks—Three dredges removed 90,116 cubic yards of earth and 15,862 cubic yards of rock from the Canal prism.

West breakwater, Colon—During the month, 167 feet of single track trestle were built. On November 1, the trestle had been extended 11,434 feet, leaving 66 feet still to be constructed. There were 14,313 cubic yards of Porto Bello rock unloaded, of which 7,730 cubic yards were handled by cranes, 6,358 cubic yards by the derrick barges, and 225 cubic yards from self-dumping scow No. 118, making a total amount unloaded to November 1st, 106,167 cubic yards.

MUNICIPAL ENGINEERING.

New Colon waterworks—The construction of the power house and filter building was commenced during the month. The work accomplished consisted of the laying of 1,200 feet of siding, the assembling of various pieces of construction equipment, and the construction of the storehouse, office, blacksmith shop, and mixing platform. The main outfall, intercepting manhole, was completed, and the excavation for the pump sumps, extending throughout the length of the power house, was commenced.

The reservoirs, water mains, sewers, roads, and oil pipe lines were maintained and extended as required to facilitate construction work. Work was continued on the Colon street improvements.

Central Division.

During the month, the total amount of material excavated by the Central Division was 1,119,847 cubic yards, of which 153,010 cubic yards were classified as earth and 966,837 cubic yards as rock. The total amount was removed by steamshovels. Of this total, 1,113,420 cubic yards were primary excavation in the Canal prism, 4,427 cubic yards from track cut-off at Station 1655, and 2,000 cubic yards from track cut-off at Station 1663.

The daily average number of steamshovels at work was 35.52, and the total number of shovel days was 959, as compared with 32.71 shovels at work, and 785 shovel days in September. For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work	W. kg. days.	Av. yards per shovel day
		Rock.	Earth.			
1911:						
Oct.....	Cu. Yds. 1,309,752	Cu. Yds. 1,124,974	Cu. Yds. 784,778	41.46	6	1,215.00
1912:						
Oct.....	1,119,847	966,837	153,010	35.52	7	1,166.58

Rainfall at Empire: 1911, 14.97 ins.; 1912, 12.44 ins.

The above table shows the average output per shovel to be 3.99 per cent less in October, 1912, than in the corresponding month of 1911.

The total amount of material excavated from the Culebra section in October, 1912—1,119,847 cubic yards—was the lowest record in that section for the month of October since 1907; in October of that year only 860,126 cubic yards were removed.

The total estimated amount of material (dry excavation) to be removed in the Central Division, according to revised estimate made July 1, 1912, was 106,116,221 cubic yards,

and up to November 1, 1912, 98,887,082 cubic yards had been removed, leaving 7,229,139 cubic yards to be removed, in order to complete all dry excavation in the Central Division. From these figures, it will be seen that 93.19 per cent of all excavation in this division was completed on October 31, 1912, and that 6.81 per cent remained to be removed. At the close of October operations, the status of the excavation in the two sections which compose this division was, as follows:

CULEBRA SECTION.		Cu. Yds.
Completed.....	86,502,417	
To be completed.....	7,229,139	
CHAGRES SECTION.		Cu. Yds.
Completed.....	12,384,655	

From the above figures, it will be seen that Culebra Cut is 92.29 per cent completed, with 7.71 per cent to be completed. The Chagres section is completed, so far as dry excavation is concerned, but it is estimated that about 300,000 cubic yards of wet excavation will have to be made in this section.

Work performed for the Pacific Division during the month included the removal of 9,333 cubic yards of rock by steamshovels, the drilling of 3,113 lineal feet of holes, the use of 6,750 pounds of dynamite in blasting; all done in connection with the Miraflores spillway. In addition, miscellaneous service, such as transportation of spoil, dumping, etc., was performed.

During the month, 48,448 cubic yards of material were dumped on the embankment for the new roadbed of the relocation of the Panama railroad, increasing the total amount used for this purpose to 4,447,974 cubic yards.

For use in the construction of the Gatun Dam, 12,293 cubic yards of rock were furnished to the Atlantic Division, making the total amount of material furnished for this purpose 5,386,603 cubic yards.

There were also furnished during the month to the Panama Railroad Company, for the Colon breakwater, 8,767 cubic yards, the total amount furnished to November 1 for this purpose being 97,900 cubic yards.

During the month of October, there were 182 lineal feet of double track trestle driven for the Naos Island breakwater, making a total of 2,499 lineal feet of double track trestle driven, with 169 lineal feet to be driven for this breakwater. During the month, 21,270 cubic yards of material were dumped from the trestle, making the total amount dumped on November 1st, 870,235 cubic yards.

The daily average number of laborers at work in this division during the month was 6,200, while the average number of gold men working was 530.

Pacific Division.

DISTRICT NO. 1—LOCKS, DAMS, AND DRY EXCAVATION.

Pedro Miguel Lock—During the month, excavation was continued in the Canal prism, south of the locks, and in the foundation for the lower guide wall. Backfilling of the two side walls and north approach wall was continued. The concrete work consisted of construction of the north wing walls and the south end of the operating tunnels in the guide wall. The total amount of concrete and large stone laid at Pedro Miguel was 6,627 cubic yards, as compared with 3,039 cubic yards during September. The concrete was placed, as follows: One thousand five hundred and forty-four cubic yards in the northeast wing wall, 3,991 cubic yards in the northwest

wing wall, 157 cubic yards in the east wall, 37 cubic yards in the center wall, 225 cubic yards in the west wall, 105 cubic yards in the floors, 346 cubic yards in the south center guide wall, 93 cubic yards around ducts in tunnel "A," and 89 cubic yards around ducts in tunnel "C."

OPERATION OF THE AUXILIARY CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours).....	8.00
Average number of hours per day worked laying concrete and large stone (actual working time).....	7.23
Average number of mixers per day.....	2.93
Average hourly output per mixer, actual working time (cubic yards).....	11.17
Large rock laid (cubic yards).....	
Concrete laid (cubic yards).....	6,627.00

Total concrete laid (cubic yards)..... 6,627.00

Daily average of 2.93 one-half cubic yard mixers, output of which was placed by hand and by mixers discharging directly into forms.

Miraflores Locks—Dry excavation was continued in the Canal prism, south of the locks, the material being used for backfilling of the locks and filling on the west dam. The work of excavating the spillway was continued, both by hydraulic method and locomotive crane. Concrete work consisted of construction of the north approach wall and extension of the west wall and lower approach wall. The amount of iron placed in the masonry amounted to 582,145 pounds. The total amount of concrete and large stone laid at Miraflores was 54,790 cubic yards, as compared with 46,122 cubic yards during September. The concrete was placed, as follows: Four thousand seventy-five cubic yards in the north center guide wall, 2,731 cubic yards in the east wall, 18,608 cubic yards in the center wall, 14,545 cubic yards in the west wall, 1,599 cubic yards in the southeast wing wall, 9,768 cubic yards in the south center guide wall, 3,302 cubic yards in the floors, 79 cubic yards around ducts in Area "A," six cubic yards around ducts in Area "B," and 76 cubic yards around ducts in Area "C."

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours) 8.00 & 12.00.....	8.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time).....	4.10	6.59
Average number of mixers per day.....	6.50	7.75
Average hourly output per mixer, actual working time (cubic yards).....	41.50	18.20
Average amount of concrete and large stone laid per hour per berm or chamber crane (actual working time) (cubic yards).....	45.72	
Large rock laid (cubic yards).....		
Concrete laid (cubic yards).....	31,414.00	23,473.00
Total concrete laid (cu. yds.).....	31,414.00	23,473.00

Two chamber cranes on 12-hour day throughout the month.

Permanent plant consisted of four berm cranes and four chamber cranes.

Auxiliary plant consisted of two 2-cubic yard, two 1-cubic yard and six ½-cubic yard mixers, averaging 7.75 per day. Auxiliary placing plant consisted of five locomotive cranes and derricks, averaging 2.68 per day.

Excavation—The total excavation during the month amounted to 235,323 cubic yards, of which 181,740 cubic yards were classified as rock and 53,583 cubic yards as earth.

Filling and embankment—During the month, 16,267 cubic yards of dry filling were added to the prism of the Pedro Miguel west dam, increasing the total amount of material in place at the end of the month to 640,954 cubic yards. The backfill at Pedro Miguel was increased by 29,956 cubic yards, the total

quantity in place at the close of the month being 740,678 cubic yards.

At Miraflores, the dry filling in the toes of the west dam was increased by 57,265 cubic yards, making the total quantities of dry and hydraulic filling in place at the end of the month 1,399,819 cubic yards and 661,048 cubic yards, respectively. The backfill at Miraflores was increased by 71,110 cubic yards, the total amount in place at the close of the month being 906,207 cubic yards.

DISTRICT NO. 2—DREDGING, BALBOA SHOPS, AND SHIPWAYS.

The following is a statement of the output of the six dredges, which were in operation during the month, and of the amount of material excavated hydraulically:

DREDGE.	Type.	WORK.		PLANT		Total.	Remarks
		Earth.	Rock.	Earth.	Rock.		
		Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	
Cardenas.....	Dipper.....		19,625			19,625	Place measurement
Corozal.....	Ladder.....	43,804	43,805			87,609	Place measurement
Marmot.....	Ladder.....	1,796	8,771			10,567	Place measurement
Badger.....	Ladder.....	32,928		11,225		44,153	Place measurement
Mole.....	Ladder.....	5,920	1,700			7,620	Scow measurement
Culebra.....	Suction.....	188,414		31,907		220,321	Scow measurement
Total.....		272,862	73,901	43,132		389,895	
Hydraulic excavation.....		95,859*				95,859	Place measurement
Grand total.....		368,721	73,901	43,132		485,754	

*89,963 cubic yards excavated from Canal prism, south of Miraflores lock site; 6,896 cubic yards excavated from site of Miraflores spillway dam.

Chamé sand excavation—Approximately 41,986 cubic yards of sand were excavated at Punta Chamé and delivered at Balboa sand bins.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

Reservoirs, water mains, sewers, and oil pipe lines were maintained and extended as required to facilitate construction work.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day (hours).....	8.00
Average number of hours per day (actual working time).....	7.02
Average number of cubic yards crushed per hour per working day.....	251.25
Average number of cubic yards crushed per working hour.....	301.89
Total output for the month (cubic yards).....	61,064

Quartermaster's Department.

Labor—The demand for unskilled labor was greater than the supply. On October 30, there were 39,382 men working in all departments and divisions of the Commission and the Panama Railroad Company, and for the lock gate and emergency dam contractors. This is the highest total on record since the inception of the work. The next highest total was in March, 1910, when the force report showed 38,676 men at work.

Buildings—Work on the alterations to the Hotel Tivoli was practically completed at the end of the month. The reconstruction of buildings moved to Corozal was almost completed. The traveling gangs of carpenters were largely reduced at the end of the month.

Quarters—There has been a great congestion in gold bachelor quarters, particularly in Gatun, Pedro Miguel, and Corozal. The census shows 500 more gold bachelors in quarters than on July 1 of this year. The great demand for married quarters still continues. On the first of November, there were 762 applications for married quarters on file in the various districts, 62 more than the previous month. The number of laborers in barracks remained about the same, there being a decrease in the European laborers, and a slight increase in colored laborers.

Material and supplies—A shortage in ties

caused considerable inconvenience. Ten thousand second hand ties were recovered from the work and reissued. These, together with a shipment of 18,000 which arrived at the end of the month, relieved the situation. The total value of material received was \$1,128,288.12. This material came forward in 32 steamers, the total weight of cargo, exclusive of lumber, piling, and ties, being 25,375 tons.

Subsistence Department.

The operation of European laborers' messes, colored laborers' kitchens, and line hotels resulted in a net profit of \$5,106.08. The Hotel Tivoli showed a net profit of \$214.46. Penitentiary, restaurants, tugs, and barges showed

a net profit of \$46.04. The total net profit on subsistence operations was \$5,366.58.

Department of Civil Administration.

COURTS.

During the month, one civil case was disposed of in the Supreme Court; 53 civil, and 40 criminal cases in the Circuit Courts; and 73 civil, and 562 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES.

Money order sales for the month amounted to \$393,947.40, and the fees to \$1,856.68. Receipts from stamp and card sales and newspaper postage aggregated \$7,329.79. The total collection of revenues made was \$15,891.21, and the collection on account of court fines, costs, and fees \$2,615.80. During the month, a total of \$120,763 was deposited in postal savings accounts, a total of \$111,696 being withdrawn.

Twenty-three vessels entered at, and the same number cleared, from the port of Ancon; 21 vessels entered at the port of Cristobal, and 22 vessels cleared from that port.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 539, of whom 481 were men and 58 women. Twenty-two nations, or 42 separate states and dependencies, were represented. Eleven convicts were committed to the penitentiary and 13 were discharged, leaving 133 convicts in confinement at the close of the month. The cost of guarding and subsisting the convicts was \$2,631, and the value of their work on the Canal Zone roads was \$2,515.40.

DIVISION OF FIRE PROTECTION.

Five fires were reported in the Canal Zone during the month. The damage to private property was \$4.50.

DIVISION OF PUBLIC WORKS.

In the city of Panama, the average daily consumption of water was 1,605,443 gallons, and in Colon, 1,035,800 gallons. The usual

inspection and maintenance work in this division was performed.

DIVISION OF SCHOOLS.

New white schools were established at Toro Point and Corozal. The consolidated high school, formerly located at Gatun, was moved to Ancon, and subsidiary high schools were maintained at Gatun and Empire for first and second year pupils living near those towns. On the opening day of school there were 909 pupils enrolled in the white, and 555 in the colored schools. For the month, the average enrollment in the white schools was 1,071.1, and in the colored schools 863.2. Of the numbers belonging, the white schools showed an average daily attendance of 96.3 per cent, and the colored schools 86.7 per cent. At the close of the month, there were employed in the white schools 46 teachers, and in the colored schools 29 teachers.

Department of Sanitation.

The total number of deaths from all causes among employes was 38, divided, as follows: From disease 28, and from violence 10, giving an annual average per thousand of 6.71 and 2.39, respectively. The annual death rate per thousand among employes for the month of October, 1911, was 11.08.

The annual death rate per thousand in the Canal Zone, and in the cities of Colon and Panama, including both employes and non-employes, was 23.08. This rate is based upon a population in the Canal Zone of 62,810, according to the census of February, 1912, and populations in Panama and Colon of 47,172 and 20,232, respectively, as estimated by the Department of Sanitation. The annual average death rate per thousand among the same classes of population for the month of October, 1911, was 21.35.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was: Whites 3.84; blacks 7.66, giving a general average for disease of 6.71. For the same month during 1910, the annual average death rate per thousand from disease among whites was 4.51; blacks 5.98, giving a general average of 5.58; and for the same month during 1911, whites 4.87; blacks 10.56, giving a general average of 9.15.

Among employes during the month, deaths from the principal diseases were, as follows: Cirrhosis of liver, one; lobar pneumonia, four; malaria fever, E. A., one; tuberculosis, eight, leaving 14 deaths from all other diseases, and 10 deaths from external violence. No cases of yellow fever, smallpox, or plague originated on, or were brought to the Isthmus during the month.

Respectfully,
GEO. W. GOETHALS,
Chairman.

Missing Men.

Any one having information regarding the whereabouts of Enrique Lizarraga, who is supposed to be on the Isthmus, and Robert W. Kintz, who left the service of the Canal Commission in 1908, is requested to communicate with the American Legation, Panama.

Society of the Chagres.

CRISTOBAL, C. Z., November 18, 1912.

White American employes of the Isthmian Canal Commission and Panama Railroad Company who are entitled to the Roosevelt Canal medal and two service bars, or in other words, who have been in the service on the Isthmus for six years or more, are eligible to membership in the Society of the Chagres.

There are now more than 390 members of the society, and it is desired to enroll every eligible prior to the

annual meeting, which will take place on the third Saturday in January, 1913.

The Year Book for 1912 is now in course of preparation and will contain, in addition to other items of interest, the biographies of those who have joined since the last publication of the volume. It will be necessary for those eligibles, who desire their names and biographies included, to become members prior to December 1, of this year, as the copy will be sent to the printer on that date.

To join, write to the undersigned, giving full name, date of entering the service on the Isthmus, department in which employed, Isthmian address, United States address, and enclose post-office money order for six dollars to cover dues and emblem.

W. F. SHIPLEY, Secretary-Treasurer.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at the Hotel Tivoli, Ancon, C. Z., on Sunday, November 24, at 8 p. m. The program follows:

1. March—Our Leader..... Dale
2. Selection—The Spring Maid..... Reinhardt
3. (a) Intermezzo—La Danseuse..... von Blon
- (b)Visions..... Hayes
4. Overture—Poet and Peasant..... Suppe
5. Popular song—There's a Girl in Havana..... Goetz
6. Excerpts from—The Bohemian Girl..... Balfe
7. Waltz—Idle Hours..... Wood
8. Medley of popular songs..... Harris
9. Flower song—Hearts and Flowers..... Tobani
10. March—Les Evénements..... Kaine

CHARLES E. JENNINGS, Musical Director.

The next concert will be given at Gorgona, Sunday, December 1, at 6 p. m.

Misdirected Letters.

ANCON, C. Z., November 20, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be procured upon request of the addressee:

Balling, George	Lachovsky, Joseph A.
Benedelli, Charles M.	Lynn, L. M.
Bennett, Arthur F.	Malony, H. James
Rodden, Capt. Henry	McCubbins, C. R.
Calloway, Mrs. Chas. (pkg.)	Moore, Smiley
Carmani, Michele	Parker, Miss Jewel
Charles, L.	Pritchard, John
Davis, H.	Reeve, J. W.
Dempwolf, Ernest	Richardson, T.
Dufny, Miss Agnes	Sage, Clarence
Fergus, Joseph	Schaeter, Chas. (4 cl.)
Fox, Richard	Schulte, E. J.
Fredrick, William	Shaw, Edward
Gaines, Mrs. Geo. S. (2 cl.)	Stewart, James (pkg.)
Gould, Allen P. (2)	Stone, Will
Heath, C. M.	Walch, G. R.
Kane, Jno.	Weber, H. E.
Kennedy, Miss Mary	Wight, L. Allen
Kershaw, J. B.	Williams, Louis E.

Married.

ANDERSON-ZETLER—On Sunday evening, November 17, in the Union Church, Cristobal, Miss Emily Louise Zetler of Philadelphia, Pa., to Captain Charles James Anderson of Brooklyn, N. Y., the Rev. Carl H. Elliott officiating. Canal Zone residence, Cristobal.

Sale of Surveying Instruments, Compasses, and Ship's Log.

OFFICE OF DEPOT QUARTERMASTER.

MOUNT HOPE, C. Z., November 19, 1912.

Sealed bids will be received at the office of the Depot Quartermaster, Mount Hope, C. Z., until 2 p. m., December 7, 1912, when they will be opened in the presence of attending bidders, for any or all surveying instruments, compasses, and ship's log now on hand in the storehouse for obsolete material. These instruments may be seen on any working day between the hours of 7 to 11 a. m., and 1 to 5 p. m., on application at this office. The right is reserved to reject any or all bids, or any combination of bids. Bids must be sealed and plainly marked: "Proposal to purchase surveying instruments," addressed to the Depot Quartermaster, Mount Hope, Canal Zone.

C. NIXON,
Depot Quartermaster.

Sale of Public Buildings at Nombre de Dios.

OFFICE OF THE CHIEF QUARTERMASTER,

CULEBRA, C. Z., November 14, 1912.

Sealed proposals will be received at this office until 3 p. m., Saturday, December 14, 1912, and then opened, for the purchase of any or all buildings, including plumbing, owned by the Commission at Nombre de Dios. List of buildings and full information will be furnished upon application to any district quartermaster, or at this office. Proposals must be accompanied by five percentum (5%) of amount bid. The Government reserves the right to accept or reject any or all bids. Envelopes containing proposals should be endorsed "Proposal for purchase of buildings," and addressed to Col. C. A. DEVOL, Chief Quartermaster, Culebra, C. Z.

OFFICIAL CIRCULAR.

Material Dumped Along the Line of the Panama Railroad.

CULEBRA, C. Z., November 15, 1912.

TO HEADS OF DEPARTMENTS AND DIVISIONS:

Complaint has been made by the Panama Railroad Company that material is being dumped along the operated line in such a manner that it lies against the rails, causing short circuit in signal installations.

This complaint has particular reference to sand and rock used by the municipal engineering forces of the Commission, but instructions should be issued to all concerned to see that in the future no material is dumped along the operated line in such a manner as to interfere with the operation of the Panama railroad trains.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

COMMISSARY DEPARTMENT.

Cold Storage Prices.

The following changes have been made in the prices of cold storage supplies:

Pate de foie gras, out of stock.
Eggs, fresh, advanced to 38 cents a dozen; 19 cents by the half dozen.
Butter, creamery special, reduced to 36 cents a pound.

Rainfall from November 1 to 16, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	1.57	4	5.31
Balboa.....	1.53	11	5.27
*Miraflores.....	4.70	11	8.33
Pedro Miguel.....	2.91	11	6.35
Rio Grande.....	1.31	11	4.83
<i>Central Section—</i>			
Culebra.....	1.26	15	4.97
*Camacho.....	1.05	15	4.69
Empire.....	1.10	7	5.03
Gamboa.....	1.21	6	5.12
*Juan Mina.....	2.02	8	8.61
Alhajuela.....	1.27	8	5.73
*El Vigia.....	1.60	6	5.71
*Gorgona.....			5.45
*Frijoles.....	1.74	7	10.27
*Monte Lirio.....	1.52	3	9.90
<i>Atlantic Section—</i>			
Gatun.....	1.58	2	8.99
*Brazos Brook.....	3.02	6	13.52
Colon.....	2.94	4	12.11
Porto Bello.....	3.81	11	13.24

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., November 15.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, November 16, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigia.	Alhajuela.	Gamboa.	Gatun Lake.
Sun., Nov. 10.....	127.7	93.8	56.2	55.9
Mon., Nov. 11.....	132.7	97.6	57.4	56.1
Tues., Nov. 12.....	131.1	96.8	57.4	56.2
Wed., Nov. 13.....	129.3	95.0	56.4	56.2
Thurs., Nov. 14.....	131.4	96.3	56.4	56.1
Fri., Nov. 15.....	131.2	96.4	56.6	56.0
Sat., Nov. 16.....	127.8	94.0	56.2	56.0

Height of low water to the nearest foot..... 125.0 91.0 44.0

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending November 27, 1912. (75th meridian time):

DATE.	High	Low	High	Low
	A.M.	A.M.	P.M.	P.M.
November 21.....	12.50	7.12	1.21	7.27
November 22.....	1.32	7.55	2.02	8.09
November 23.....	2.13	8.35	2.42	8.50
November 24.....	2.53	9.16	3.22	9.32
November 25.....	3.33	9.57	4.03	10.13
November 26.....	4.15	10.39	4.43	10.58
November 27.....	4.57	11.22	5.28	11.43

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The following entertainment course has been decided on for the coming season in the clubhouses: Miss Gay Zenola MacLaren; The Apollo Concert Company; The Edith Harris Scott Company; The DeKoven Male Quartet; Metropolitan Concert Company. The first of these artists to appear will be Miss MacLaren, who will arrive on the Isthmus about December 15, and will present an entirely new repertoire. Other dates will be announced later.

A "Forum" has been organized for the purpose of presenting to the public a series of talks on topics of vital interest. Among those who have promised to assist in this venture are Col. C. A. Devol, Mr. M. H. Thatcher, Judge Thomas E. Brown, Prof. F. A. Gause, Mr. J. A. Smith, Mr. W. B. Childers, Dr. A. J. Orenstein, Mr. C. C. Carr, and Mr. S. P. Verner. Dr. Edward T. Devine, secretary of the Charity Organization Society of New York City, who expects to visit the Isthmus next January, will also be one of the speakers. With each of these talks, there will be given a substantial musical program of from four to six numbers. The programs in detail will be published by the secretaries of the various clubhouses from time to time. The first of these events was given at Corozal on Sunday evening, November 17.

The moving picture schedule for the week November 25 to 30, will be, as follows: Monday, Culebra; Tuesday, Corozal; Wednesday, Empire; Thursday, Gorgona; Friday, Gatun; Saturday, Cristobal.

The standing of the teams in the tenpin tournament on November 16 was, as follows:

Team.	Won.	Lost.	P. C.
Gatun.....	14	7	.666
Empire.....	14	7	.666
Cristobal.....	12	9	.571
Culebra.....	7	11	.388
Corozal.....	7	14	.333
Gorgona.....	6	12	.333

The standing of the teams in the basketball league on November 16 was, as follows:

Team.	Won.	Lost.	P. C.
Empire.....	4	0	1.000
Corozal.....	4	1	.800
Gorgona.....	2	3	.400
Gatun.....	1	3	.250
Cristobal.....	0	4	.000

COROZAL.

The Cristobal bowling team won two out of three games at Corozal on Saturday night, November 16. Scores were, as follows:

Corozal.....	873	849	.688
Cristobal.....	910	836	.847

The first in a series of talks under the auspices of the "Forum" was given on Sunday night, November 17. There was an attendance of nearly 100. The following program was carried out: "Still, Still with Thee," quartet, Messrs. Ross, Dickson, Case, and Acher; bass solo, "The Palms" by Lieutenant Acher; "Just a Song at Twilight" by the quartet; bass solo "The Perfect Day" by Mr. Case; tenor solo "Hold Thou my Hand" by Mr. Ross; address, "Literature and Life" by Prof. F. A. Gause, superintendent of schools; quartet, "The Rose of Sharon."

The next "Forum" program will be given on December 1. The speaker will be Mr. W. B. Childers of Gatun, and music will be furnished by a mixed quartet, composed of Mrs. Boyd, Mrs. Faure, Mr. Ross, and Mr. Case.

The "Suffragette" reception, which was to have been held Friday night, November 15, has been indefinitely postponed.

CULEBRA.

On Tuesday night, November 12, the new poolroom and bowling alleys were opened. Capt. R. E. Wood rolled the first ball. Over 100 men visited the new quarters. The Empire team bowled the Culebra team and were defeated two out of three games by the following scores:

Empire.	Culebra.
Pinney.....	123 139 124
Henry.....	185 169 174
Warr.....	151 132 127
Goolsby.....	121 108 194
Gustavson.....	166 137 166
Case.....	144 178 116
Mengel.....	158 155 161
Cushing.....	163 200 183
Anderson.....	169 157 106
Dougherty.....	145 161 138

Total... 746 685 785 779 851 704

Refreshments were served during the evening.

It is desired to call attention to the fact that the membership dues in the Culebra association remain as heretofore, namely, \$10 for annual ticket, \$6 for semi-annual, and \$4 for quarterly. The privileges are for members. The upkeep of equipment, reading room, and library, etc., is paid for from membership receipts. Members are admitted free to all entertainments which are held in the schoolhouse. The reading room and library are on the second floor in the annex over

the Chief Quartermaster's office. Now is the opportune time to join.

EMPIRE.

The Empire and Gatun teams bowled at Empire on Saturday, November 16. Both teams procured the highest team scores that have been bowled so far in the league. Empire won two out of three games with a team average for three games of 923. The Gatun team's average for three games was 910. Scores were, as follows:

Empire.	Gatun.
Gustavson.....	189 190 191
Potter.....	216 186 169
Edwards.....	186 197 149
Pearson.....	188 164 185
Huson.....	189 189 179
Swallow.....	171 190 203
Omeara.....	214 170 178
Rabbitt.....	173 195 212
Hodges.....	164 177 164
Barte.....	192 152
Oettli.....	173

Total..... 968 926 873 916 884 930

Eighteen men have entered the handball tournament so far. The handball court will be repainted at once and the schedule started.

In the November handicap pool tournament there are 20 entries.

The first Y. M. C. A. "Forum" at Empire will be given on Sunday evening, November 24. Prof. Gause, of the Division of Schools, will speak on "Literature and Life." The musical part of the program will be a mixed quartet, composed of Mrs. Faure, Mrs. Boyd, Mr. Case, and Mr. Ross; also, solos by members of the quartet. The public is invited.

GORGONA.

The following are the high scores in bowling for the week: Keppler, 203; Stewart, 216; Denst, 213. The following are the two leading teams in the ragtime bowling tournament: Sims and Keppler, first, 1,123; Stewart and Calloway, second, 1,051.

The Gorgona chorus will give a special entertainment on Sunday evening, November 24. The special music, with a special address by Rev. Nellis, will constitute a Thanksgiving service. Everyone is invited to attend. Service begins at 7 p. m.

A glee club is preparing to give special entertainments.

A Christmas benefit carnival was held on Saturday evening, November 16, consisting of 17 different shows. A special Christmas for the Gorgona people is being planned.

The Empire basketball team will play at Gorgona on Saturday evening, November 23.

GATUN.

George W. Huttlemeyer has resigned as bowling attendant. He will leave for the United States in a few days. John J. Luckey has been appointed night office assistant.

The first meeting of the Y. M. C. A. "Forum" will be held at Gatun on Thursday evening, November 21. Mr. Frank A. Gause will speak on "Literature and Life". A mixed quartet, consisting of Mrs. A. P. Boyd, soprano; Mrs. L. L. Faure, alto; Mr. Ross, tenor, and Mr. Case, bass, will sing the "Sextet from Lucia," and several other selections. Members and friends are cordially invited. Meetings of the "Forum" will occur bimonthly, and will consist of an address and a musical feature.

An "Every day in the year club" for the study of certain portions of the New Testament has been organized, with a membership of 12. Copies of "Association Men" are furnished to members.

The Democratic club of Gatun and the Gatun Socialist club were organized recently. The Democrats, having been victorious at the recent election, are planning to celebrate their victory with an appropriate social function.

Members may join the Spanish class at any time. Class nights, Wednesday and Friday.

Two rowing machines have been ordered for the gymnasium classes.

Red Cross seals are on sale at the desk. Mr. DePoorter, Mr. Wurster, and Mr. Neely were presented with medals recently, as winners of the "Lock City" 3-cushioned billiard tournament.

The standing of the boys' athletic contest is, as follows: Meis, 1,062; Cummings, 998; Jewey, 880; Session, 846; Quinn, 833; Waid, 789; Gray, 762; Bethea, 624; Griffith, 593; Billet, 554; Loulan, 540; Appleton, 455; Carkeet, 452; Kerr, 374; Witt, 328; Sibert, 264; Bath, 104; Graham, 82.

CRISTOBAL.

Tuesday night, the "Bull Moose" party of Cristobal and Colon Beach gave a concert and dance in honor of their victory in the local mock election. There was an attendance of about 400.

On Friday night, "Open house" was inaugurated. Mr. E. L. Mosher sang several solos, accompanied by Mr. H. S. Glick on the piano. The attendance was 300. The next "Open house" night will be on Friday, November 22. All men are welcome. Members are especially invited to come and bring their friends.

Saturday night, November 16, the Gatun basketball team defeated the Cristobal basketball team by the score of 25 to 15. In the first half, Cristobal was ahead by a score of 12 to 6, but in the second half its team work was poor, and Gatun scored repeatedly.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Colon.....	P. R. R. Thursday.....	Nov. 14
Advance.....	P. R. R. Wednesday.....	Nov. 20
Panama.....	P. R. R. Tuesday.....	Nov. 26
Allianca.....	P. R. R. Tuesday.....	Dec. 3
Colon.....	P. R. R. Monday.....	Dec. 9
Advance.....	P. R. R. Saturday.....	Dec. 14
Panama.....	P. R. R. Friday.....	Dec. 20
Allianca.....	P. R. R. Friday.....	Dec. 27

CRISTOBAL TO NEW YORK.

Allianca.....	P. R. R. Wednesday.....	Nov. 20
Colon.....	P. R. R. Tuesday.....	Nov. 26
Advance.....	P. R. R. Monday.....	Dec. 2
Panama.....	P. R. R. Sunday.....	Dec. 8
Allianca.....	P. R. R. Sunday.....	Dec. 15
Colon.....	P. R. R. Saturday.....	Dec. 21
Advance.....	P. R. R. Thursday.....	Dec. 26
Panama.....	P. R. R. Thursday.....	Jan. 2
Allianca.....	P. R. R. Wednesday.....	Jan. 8

NEW YORK TO COLON.

Zacapa.....	U. F. C. Wednesday.....	Nov. 13
Prinz Joachim.....	H.-A. Saturday.....	Nov. 16
Sixaola.....	U. F. C. Saturday.....	Nov. 16
Almirante.....	U. F. C. Wednesday.....	Nov. 20
Prinz Eitel Friedrich.....	H.-A. Saturday.....	Nov. 23
Carrillo.....	U. F. C. Saturday.....	Nov. 23
Trent.....	R.-M. Saturday.....	Nov. 23
Santa Marta.....	U. F. C. Wednesday.....	Nov. 27
Prinz August Wilhelm.....	H.-A. Saturday.....	Nov. 30
Turrialba.....	U. F. C. Saturday.....	Nov. 30
Prinz Sigismund.....	H.-A. Saturday.....	Dec. 7
Magdalena.....	R. M. Saturday.....	Dec. 7
Prinz Joachim.....	H.-A. Saturday.....	Dec. 14
Oruba.....	R. M. Saturday.....	Dec. 21
Prinz Eitel Friedrich.....	H.-A. Saturday.....	Dec. 21
Prinz August Wilhelm.....	H.-A. Saturday.....	Dec. 28

COLON TO NEW YORK.

Metapan.....	U. F. C. Thursday.....	Nov. 21
Prinz Sigismund.....	H.-A. Monday.....	Nov. 25
Tivives.....	U. F. C. Tuesday.....	Nov. 26
Magdalena.....	R. M. Tuesday.....	Nov. 26
Zacapa.....	U. F. C. Thursday.....	Nov. 28
Prinz Joachim.....	H.-A. Monday.....	Dec. 2
Sixaola.....	U. F. C. Tuesday.....	Dec. 3
Almirante.....	U. F. C. Thursday.....	Dec. 5
Prinz Eitel Friedrich.....	H.-A. Monday.....	Dec. 9
Tagus.....	R. M. Tuesday.....	Dec. 10
Carrillo.....	U. F. C. Tuesday.....	Dec. 10
Santa Marta.....	U. F. C. Thursday.....	Dec. 12
Prinz August Wilhelm.....	H.-A. Monday.....	Dec. 16
Turrialba.....	U. F. C. Tuesday.....	Dec. 17
Prinz Sigismund.....	H.-A. Monday.....	Dec. 23
Arcadian.....	R. M. Tuesday.....	Dec. 24
Prinz Joachim.....	H.-A. Monday.....	Dec. 30

NEW ORLEANS TO COLON.

Atenas.....	U. F. C. Saturday.....	Nov. 16
Heredia.....	U. F. C. Wednesday.....	Nov. 20
Parismina.....	U. F. C. Saturday.....	Nov. 23
Salamanca.....	U. F. C. Wednesday.....	Nov. 30
Abangarez.....	U. F. C. Saturday.....	Nov. 30

COLON TO NEW ORLEANS.

Abangarez.....	U. F. C. Thursday.....	Nov. 21
Cartago.....	U. F. C. Thursday.....	Nov. 21
Atenas.....	U. F. C. Thursday.....	Nov. 28
Heredia.....	U. F. C. Thursday.....	Nov. 28
Parismina.....	U. F. C. Thursday.....	Dec. 5
Salamanca.....	U. F. C. Thursday.....	Dec. 5
Abangarez.....	U. F. C. Thursday.....	Dec. 12

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers for New York on alternate Tuesdays, at 2 p. m.; for Southampton on alternate Tuesdays, at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m. for Limon, via Bocas del Toro, on Tuesdays at 5 p. m.

The following ships arrived, or departed from, the port of Balboa, during the week ending November 16: Arrivals—November 10, *San José*, from San Francisco; November 11, *Chile*, from Guayaquil; November 11, *Quito*, from Guayaquil and intermediate ports; November 12, *Ucayali*, from Callao; November 13, *Lukenbach*, from San Francisco; November 13, *Guatemala*, from Callao; November 14, *Santa Maria*, from San Francisco.

Departures—November 9, *Manari*, to Buenaventura; November 11, *Huallaga*, to Callao; November 11, *Limari*, to Valparaiso; November 13, *Peru*, to Guayaquil; November 14, *Peru*, to San Francisco; November 15, *Mackinaw*, to San Francisco.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Canal Models and Lectures to Tourists.

The models of the Canal locks and the relief maps of the Canal that have heretofore been at the Administration Building in Culebra, where they have been used in illustrating a lecture delivered to tourists, are being moved to Ancon. They will be installed in the furniture storehouse about two hundred yards north of the Tivoli Hotel. The new lecture room will have seats for 175 people.

Hotel Books for Cash.

The list of places at which commissary books are sold for cash will be found in THE RECORD of October 2. To it has been added Gorgona commissary. This with relation to the circular on cash sale of hotel books, published elsewhere in this issue.

Balboa Drydock Gate Contract.

The contract for the manufacture and erection of two 56-foot gate leaves and anchorages complete for the new drydock at Balboa has been awarded to the McClintic-Marshall Construction Company, the only firm that submitted a bid. It calls for the manufacture of the leaves, the assembly of one of them at the company's shops, and the erection of the gate complete in 425 days for \$110,000.

Bas Obispo-Balboa Labor Train.

A morning and evening labor train was placed in service between Bas Obispo and Balboa on November 1. It leaves Bas Obispo at 5.35 a. m., and arrives at Balboa at 6.20 a. m.; leaves Balboa at 5.05 p. m., and arrives at Bas Obispo at 5.50 p. m. This train is for the accommodation of gold employees only, and no one is permitted to ride without a pass signed by the division engineer of the Central Division.

Telephone Changes.

The Isthmian Telephone Company, which operates a long distance commercial telephone business over the Panama Railroad Company's system, under a contract effective August 14, 1911, has been assigned a direct circuit for its sole use. Heretofore, the telephone company has had the use of the railroad

company's wires, but calls on account of official business of the Canal Commission took precedence over commercial messages. The Isthmian company has announced a change in rates to intermediate points in the Canal Zone, effective November 15. There will be no change in the rates between Panama and Balboa, or Colon and Cristobal, but the rate to all other Canal Zone points over Panama railroad wires will be 20 cents, United States currency. The rates to these points formerly varied from 10 cents from Panama to Empire, to 45 cents from Panama to Gatun.

Gravel Instead of Concrete Paving at Gatun Locks.

For completing the surface of the dry fill, between the towing and return tracks, on top of the lock walls at Gatun, gravel is to be substituted for concrete, originally specified. This is, because the fill will settle and consolidate, which would cause concrete paving to crack. After the fill has settled it will be practicable to pave the gravel with concrete, if desired. The gravel will be laid three inches deep, over a space 13 feet wide on each wall, and as long, approximately, as the walls proper. The 2,000 cubic yards required will be supplied from the stock pile of gravel dredged from the Chagres River at Gamboa. The work of placing has been nearly completed on the east side wall of the upper lock.

Panama Railroad Baggage Contract.

The contract for handling baggage on Panama railroad trains for a period of five years has been awarded by the Panama Railroad Company to Messrs. Luis F. Estenoz, Jr., and P. T. Arosemena of Colon. Five bids were received in response to advertisement, as follows:

J. C. Angel of Colon, whose bid was in the form of a reciprocal arrangement, and who submitted no cash offer for the concession.

John H. A. Davis of Cristobal, whose bid was \$200 per annum.

E. B. Thornton of Empire, whose bid was \$300 per annum.

Albert Lindo, of Panama, who offered \$600 for the privilege for the first year; \$840 for the second; \$1,080 for the third; \$1,200 for the fourth; and \$1,500 for the fifth.

Estenoz and Arosemena, whose bid was \$1,512 per annum, or a total of \$7,560 for the 5-year period. The award was made to the last named firm, as the highest responsible bidder.

Work of Lidgerwood Unloaders in October.

During the month of October, 1912, the following Lidgerwood trains and cars were unloaded by the Central Division:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa.	4	1,374	27,480
Miraflores.	2	521	10,420
Gamboa.	3*	799	16,779
Total.	9	2,694	54,679

*One unloader worked six days.

STATUS OF CANAL WORK.

New Estimate of Work Done and to Be Done on November 1.

A supplementary estimate of work that must be done before the canal is completed has been made as of November 1; and a tabular statement of the various items is published herewith. The original estimate is that of December, 1908, and, according as new facts have developed in the work, this has been revised from time to time. There has been an increase in excavation since 1908 of over 36 million cubic yards; a decrease in the amount of fill for dams, a slight increase in the amount of concrete required for the locks.

EXCAVATION.

The changes in the amount of excavation on various parts of the canal are shown by the following table:

DIVISIONS.	1909				1910				1911				1912			
	Atlantic	West	Dr.	Total	Atlantic	West	Dr.	Total	Atlantic	West	Dr.	Total	Atlantic	West	Dr.	Total
Atlantic	3,515,000	38,084,201	8,500,147	41,007,310	3,515,000	38,084,201	8,500,147	41,007,310	3,515,000	38,084,201	8,500,147	41,007,310	3,515,000	38,084,201	8,500,147	41,007,310
West	9,561,911	8,274,054	43,357,345	78,042,295	9,561,911	8,274,054	43,357,345	78,042,295	9,561,911	8,274,054	43,357,345	78,042,295	9,561,911	8,274,054	43,357,345	78,042,295
Dr.	89,794,493	84,186,724	12,357,291	186,338,508	89,794,493	84,186,724	12,357,291	186,338,508	89,794,493	84,186,724	12,357,291	186,338,508	89,794,493	84,186,724	12,357,291	186,338,508
Total	132,871,904	130,544,979	64,194,783	327,611,666	132,871,904	130,544,979	64,194,783	327,611,666	132,871,904	130,544,979	64,194,783	327,611,666	132,871,904	130,544,979	64,194,783	327,611,666

Of the total of 211,351,000 there remained to be excavated on November 1 only 28,391,000.—In the Atlantic Division 6,714,000 cubic yards; Central Division, 7,549,000 cubic yards; Pacific Division, 14,128,000.

The gradual increase in the estimated excavation in the Atlantic Division is due to the silting of the sea level channel between Limon Bay and Gatun Locks. This has been greater than was anticipated, and the addition of about 5½ million yards since 1908 is due to this cause, and to about 600,000 yards more of

(Continued on page 111.)

NOTES OF PROGRESS.

(Continued.)

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 92 per cent completed, 208,708 cubic yards, out of a total of 225,600, having been placed at the close of work on November 23. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete laid.	Hours worked.	No. mixers used.
	<i>Cu. Yds.</i>		
November 18.....	66	6.50	1
November 19.....	32	3.00	1
November 20.....	64	6.25	1
November 21.....	26	2.50	1
November 22.....	82	7.75	1
November 23.....	48	4.75	2
Total.....	318	30.50	1.16
Previously reported...	208,390		
Grand total.....	208,708		

Resignation of Mr. S. B. Williamson.

Mr. S. B. Williamson has resigned his position as Division Engineer of the Pacific Division and will leave for the United States on December 12. He will enter the service of J. G. White and Co. Ltd. of London, international engineers and contractors, as Principal Assistant Engineer with headquarters in London. His work will be to direct construction in all parts of the world, except the United States and its possessions.

Mr. Williamson entered the canal service in May 1907, having been called here by Col. Goethals to become division engineer of the Pacific Locks and Dams. Upon the reorganization in 1908, he was made Division Engineer of the Pacific Division, and in that capacity has had charge of the construction of the locks at Pedro Miguel and Miraflores, involving the placing of 2,400,000 cubic yards of concrete; dry excavation amounting to 6,900,000 cubic yards; dredging at the Pacific entrance, amounting to 39,300,000 cubic yards; construction of terminal docks at the Pacific entrance; and municipal work in Panama city and the Canal Zone south of Culebra. His engineering work on the Isthmus has included the design and specifications of the concrete handling, stone crushing, and sand handling plants of the Pacific Division, and their installation; reinforced concrete reservoir and other municipal engineering; and the design of the Pacific terminal wharves and piers, with about 5,000 linear feet of docking space.

Before coming to Panama, Mr. Williamson

had been engaged from 1886 to 1890 on railroad work in the northwestern part of the United States, and for the following two years was in general engineering and construction work in southern cities. In 1892 he entered the service of the United States Government on engineering and construction work connected with the navigation of the Tennessee River and remained there until 1900, with the exception of a few months in the Army during the Spanish-American War in 1898. His work included dredging and the construction of training dams near Chattanooga, Tenn., and Florence, Ala., the construction of the Colbert Shoals Lock at Riverton, Ala., and the operation and care of the Muscle

Shoals Canal, which covers about 20 miles and has eleven locks. In 1900 he was transferred to Newport, R. I. as Assistant Engineer in charge of the fortification work in that district, including the design and construction of 18 gun batteries, and the maintenance of all completed forts. During four years of his service on the Tennessee River, and three years at Newport, he was associated with Col. Goethals. In 1904 he became engineer of the Expanded Metal Engineering Company of New York, but after one year opened an office in Baltimore as consulting engineer. During these years his work was principally in designs and estimates for reinforced concrete buildings.

CONCRETE WORK IN THE LOCKS.

On November 1 a revised estimate of the concrete to be placed in the locks was made, and the amount determined upon, 4,446,530 cubic yards is 93,967 yards greater than that heretofore published. On this new basis, over 93 per cent of the total had been laid at the close of work on November 23, the amount in place being 4,120,533 cubic yards.

GATUN LOCKS.

Over 93 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on November 23 being 1,905,500 cubic yards, out of a total of 2,043,730. A statement of the amount of concrete placed in the locks each working day of the week ending November 23, and of the total, follows; and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue:

[illegible]

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 98 per cent completed, 892,001 cubic yards, out of a total of 903,000, bucket measurement, having been placed at the closed of work on November 23. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.							Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.						
	Concrete placed	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers				
November 18.....				Cu. Yds. 377	37.00	5	Cu. Yds. 4	Cu. Yds. 4	Cu. Yds. 381	
November 19.....				333	31.00	4	16	.....	349
November 20.....				350	37.00	5	22	.....	372
November 21.....				369	32.00	5	10	.....	379
November 22.....				388	34.00	5	15	.....	403
November 23.....				344	33.00	4	10	.....	354
Total				2,161	204.00	4.67	77		2,238	
Previously reported.....								4,493	889,763	
Grand total.....								4,493	892,001	

MIRAFLORES LOCKS.

Over 94 per cent of the concrete for the system of two twin locks at Miraflores was in place November 23, the total amount on that date being 1,323,032 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.									Mixed by hand.	Large stone.	Total.
				2-cubic yard mixers.			1-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
	<i>Cu. Yds.</i>						<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>		<i>Cu. Yds.</i>
November 17.....										65	10.00	2	60		60
November 18.....	1,388	33.83	7							60	10.00	1	25		1,478
November 19.....	1,416	27.00	7							144	18.00	3	40		1,521
November 20.....	1,674	32.33	8							199	24.00	4	19		1,858
November 21.....	1,776	38.00	8							184	20.00	4	57		1,994
November 22.....	1,682	33.83	8							167	19.00	3	42		1,923
November 23.....	1,626	32.83	8				51	3.00	1						1,886
Total.....	9,562	198.32	7.67				51	3.00	1	819	101.00	2.83	288		10,720
Previously reported.....														3,693	1,312,312
Grand total.....														3,693	1,323,032

STATUS OF CANAL WORK.

(Continued from page 109.)

dredging excavation at Gatun Locks than was estimated.

In the Central Division the increase of 16,600,000 cubic yards is due almost entirely to the development of the slides in Culebra Cut, and their gradual increase as the work advanced is indicated in the above table.

An increase of 12 million cubic yards in the dredging estimated for the Pacific Division is due, about seven million yards to the dredg-

ing necessary for the Balboa terminal basin and docks, and the balance to dredging made necessary to maintain the channel from silting, and to hydraulic excavation by monitors at Miraflores. The increase in the dry excavation is due to an addition of 1,400,000 cubic yards in the Balboa terminals, and the balance in the channel and locks.

ITEMIZED STATEMENT OF WORK DONE AND TO BE DONE

The following statement shows by items the work already accomplished and how much remained to be done on November 1:

DIVISION AND DESCRIPTION	TO NOVEMBER 1, 1912		
	Total performed to date.	Total remaining to be performed, Estimate of Nov. 1, 1912.	Per cent completed
	Cubic Yards	Cubic Yards	
Atlantic Division:			
Dry Excavation—			
Channel and Accessories.....	2,196,000		100
Gatun Dam, Spillway, and accessories....	1,642,000		100
Gatun Locks and accessories.....	4,773,000	230,000	95
Power House.....	74,000		100
Total.....	8,685,000	230,000	97
Wet Excavation—			
Channel and accessories.....	30,728,000	6,484,000	83
Gatun Dam.....	38,000		100
Gatun Locks and accessories.....	1,757,000		100
Total.....	32,523,000	6,484,000	83
Filling Dams and Levees—			
Gatun Dam, dry.....	10,914,000	1,282,000	89
Gatun Dam, hydraulic.....	10,729,000		100
Mindi Levee.....	198,000		100
Caño saddle.....		250,000	
Total.....	21,841,000	1,532,000	93
Back Fill—			
Gatun Locks.....	2,511,000	217,000	92
Gatun Power House.....			
Gatun Spillway.....	25,000		100
Total.....	2,536,000	217,000	92
West Breakwater.....	2,227,000	694,000	76
Concrete			
Gatun Dam and Spillway.....	208,300	17,300	92
Gatun Locks.....	1,897,300	146,430	93
Gatun Power House.....	200		100
Total.....	2,105,800	163,600	93
Total Excavation.....	41,208,000	6,714,000	86
Total Fill.....	24,377,000	1,749,000	93
Total Breakwater (Colon).....	2,227,000	694,000	76
Total Concrete.....	2,105,800	163,600	93
Central Division:			
Excavation—			
Dry.....	98,868,000	7,549,000	93
Wet.....			
Total.....	98,868,000	7,549,000	93
Concrete.....	1,300	400,000	0
Pacific Division:			
Dry Excavation—			
Pedro Miguel Locks and Dams.....	1,312,000		100
Channel.....	2,001,000	2,638,000	43
Miraflores Locks and Dams.....	2,763,000	174,000	94
Balboa Terminals.....	255,000	1,168,000	18
Total.....	6,331,000	2,826,000	69
Wet Excavation—			
Channel and Accessories, Dredges.....	33,830,000	4,443,000	88
Channel and accessories, Monitors.....	1,465,000	94,000	94
Miraflores Locks and Dams, Dredges.....	652,000		100
Miraflores Locks and Dam, Monitors.....			
Balboa Terminals.....	606,000	6,765,000	
Total.....	36,553,000	11,302,000	76
Filling Dams—			
Pedro Miguel Dam, Dry.....	641,000	26,000	96
Miraflores Dam, Dry.....	1,400,000	86,000	94
Miraflores Dam, Hydraulic.....	661,000		100
Total.....	2,702,000	112,000	96
Back Fill—			
Pedro Miguel Locks and Dams.....	741,000	280,000	72
Miraflores Locks and Dams.....	1,356,000	1,060,000	96
Balboa Terminals.....	215,000	985,000	18
Total.....	2,312,000	2,315,000	50
Concrete—			
Pedro Miguel.....	876,000	27,000	97
Miraflores.....	1,272,800	227,000	85
Balboa Terminals.....	500	370,000	0
Total.....	2,149,300	624,500	77
Total Excavation.....	42,883,000	14,128,000	75
Total Fill.....	5,014,000	2,427,000	67
Total Fill.....	2,149,300	624,500	77
Grand totals—			
Excavation.....	182,960,000	28,391,000	87
Fill.....	29,390,000	4,176,000	88
Breakwater (Colon).....	2,227,000	694,000	76
Concrete.....	4,256,400	1,188,100	78

A PROCLAMATION.

By the President of the United States—
Panama Canal Toll Rates.

I, William Howard Taft, President of the United States of America, by virtue of the power and authority vested in me by the Act of Congress, approved August 24, 1912, to provide for the opening, maintenance, protection and operation of the Panama Canal and the sanitation and government of the Canal Zone, do hereby prescribe and proclaim the following rates of toll to be paid by vessels using the Panama Canal:

1. On merchant vessels carrying passengers or cargo, \$1.20 per net vessel ton—each 100 cubic feet—of actual earning capacity.
2. On vessels in ballast without passengers or cargo 40 per cent less than the rate of tolls for vessels with passengers or cargo.
3. Upon naval vessels, other than transports, colliers, hospital ships and supply ships, 50 cents per displacement ton.
4. Upon army and navy transports, colliers, hospital ships and supply ships \$1.20 per net ton, the vessels to be measured by the same rules as are employed in determining the net tonnage of merchant vessels.

The Secretary of War will prepare and prescribe such rules for the measurement of vessels and such regulations as may be necessary and proper to carry this proclamation into full force and effect.

In witness whereof, I have hereunto set my hand and caused the seal of the United States to be affixed.

Done at the City of Washington this
13th day of November in the year
[SEAL.] of our Lord 1912 and of the independence of the United States the

137th.

By the President: WM. H. TAFT.

P. C. KNOX,

Secretary of State.

[No. 1225.]

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the two weeks ending November 23:

DATE.	Hours worked.	Cubic yards.
November 11.....	7.50	2,368
November 12.....	6.40	1,824
November 13.....	6.25	2,423
November 14.....	6.45	1,981
November 15.....	7.30	2,439
November 16.....	7.15	2,397
Total.....	42.25	13,432
November 18.....	7.00	1,944
November 19.....	7.20	2,255
November 20.....	7.10	2,077
November 21.....	8.10	2,013
November 22.....	8.45	2,301
November 23.....	8.45	2,114
Total.....	47.10	12,771

Unlawful Target Practice.

The Chief of Police of the Canal Zone calls attention to the fact that persons have been using mile post markers, sign boards, glass discs in signals, etc., along the Panama railroad line as targets for rifles or revolvers. In the future every effort will be made to prevent such practice and to prosecute those caught committing the offense.

WATER FROM GATUN LAKE.

Tunnel to Pass Supply of Water to Colon System—Decomposition in the Lake.

Operations began on November 14 for driving a tunnel through the divide between Gatun Lake and the watershed of Brazos Brook reservoir, to conduct an auxiliary supply of water for Colon and Cristobal. The tunnel, six by six feet in cross section, will be driven with its bottom 75 feet above sealevel, which is four feet below the minimum level of the lake under operating conditions, and the water will be passed through a 20-inch main under the head existing between the surface of the lake and the reservoir. The top of the spillway of the reservoir is 49.4 feet above sealevel, and the intakes of the pipe through which the water passes to the filters and pumps is at elevation 32 feet. The point at which the tunnel is to be constructed is about three miles above the dam of Brazos Brook reservoir, and about a mile and a half from the Panama railroad, at Quebrancha siding as it crosses the lake on the relocated line.

The project of cutting a tunnel into the lake, below its surface, was open to objection because of the possibility that water might seep along such a cut and be a waste and menace. The nature of the divide was determined by a number of borings. Beneath a surface covering of earth and shale, the divide is a ridge of solid blue argillaceous sandstone, of such density that water poured into the drill holes showed little absorption. At either end of the tunnel an approach will be made through an open cut; on the lake side tunneling will begin where the sandstone is found to extend above the high water level of the lake; on the reservoir side, the cut will be continued until a 12-foot face of the sandstone is exposed. The portals will be sealed with concrete around the main, and it is possible that the main through the length of the tunnel will be imbedded in concrete, for strength and protection against rusting. The height of the saddle at the point above the tunnel is 187 feet above sealevel; tunnel and approaches together will be about 600 feet in length. The flow of water through the tunnel will be controlled by three methods; by stop planks over the intake; by sluice gates in the gatehouse; and by 20-inch valves in the mains.

Two other projects were considered for transferring the water from the lake to the reservoir without cutting a tunnel below the surface of the lake. One involved laying a main over the lowest saddle between the watersheds, which is at elevation 150 feet, approximately, and pumping the water over. The other contemplated a tunnel with its bottom five feet above high water level of the lake, and the construction of a siphon system. The estimated cost of the siphon system was placed at \$25,500, with an operating expense of about \$100 per month. The estimated cost of the tunnel and main as adopted, is \$16,700, with no operating charges.

The construction of the tunnel will insure a maximum supply of water to Colon and Cristobal amounting to 12,000,000 gallons daily. Following the past dry season, the water in the Brazos Brook reservoir was supplemented by pumping from the Mindi River, and by hauling water in lighters from the Agua Clara supply at Gatun. The quantity supplied from sources outside the Brazos Brook watershed amounted to about 114 750,000 gallons.

Excavation was begun for the construction

of the new filtration plant at Mount Hope, as a part of the project for increasing the supply of water to Colon and Cristobal. This is to be modern in every respect and will be provided with a special system of spray aeration, for treating the water from Gatun Lake. In its rise the lake has spread over approximately 80 square miles, beyond the 21 square miles which it covered when its normal surface was 14 feet above sea level. The water surface is now about 100 square miles; when the lake has attained its maximum elevation of 87 feet above sealevel its surface will be 167.4 square miles. In its spread it inundates a territory covered with timber or dense vegetation, or swamp. The vegetation has been decaying, and the stagnant backwaters are dark and tainted with the various orders of putrefaction. In some instances the water has become so exhausted of oxygen as to kill quantities of fish, the decaying bodies of which add to the taint. At the spillway of Gatun Dam, where the water is passing over the uncompleted portion of the ogee, at elevation + 50 feet, it has a strong and repulsive smell, mostly of hydrogen sulphide. This sulphide is present to such extent that, liberated from the spray in gaseous form, it attacks the paint on nearby ironwork and buildings. A stiff breeze across the spillway toward Gatun will make the fumes perceptible in the village, as much as a mile away.

The lower strata of water in the lake, as in lakes in temperate countries, become exhausted of dissolved oxygen. The living organisms, plants and animals, use some of it in respiration, but by far the most is consumed in the decomposition of organic matter. The amount and rate of exhaustion of dissolved oxygen at the bottom of a lake depend on the quantity of organic matter, the temperature of the water, and the volume of water below the thermocline. All three of these factors are present in Gatun Lake to a relatively high degree.

They are all present, however, to a high degree in the reservoirs in use over the Canal Zone. The prolonged and heavy rains furnish a large and deep stratum of water, richly laden with oxygen. After the part "turnover," occasioned in the setting up of vertical currents by the inflow of large quantities of cooler stream water at the beginning of the rainy season, the top stratum does not present conditions of stagnation. The stagnant water lies in the lower strata, out of contact with dissolved oxygen.

The oxygen-bearing stratum of water in the Carabali reservoir reaches a depth of eight feet in the middle of the rainy season; in the Cocoli reservoir it is seven feet deep; in Comacho reservoir, 16 feet; in Brazos Brook reservoir, 14 feet, and in the Rio Grande reservoir, 15 feet. The tunnel into Gatun Lake will have its intake within a normal ten feet of the surface.

Conditions within Gatun Lake will be much like those of Cocoli reservoir, which was formed by impounding the waters of the Cocoli River behind the west dam at Miraflores Locks, inundating a considerable area of vegetation. During the seasons of 1910-1911, and part of 1912, there have been opportunities to observe any disagreeable evidence of decomposition, in conjunction with stagnation, occurring at Cocoli reservoir. Except at times of "turnover" the water consumed has been free of taint worth consideration, while

analyses showed the upper stratum to have been free from objectionable matter.

Water now flowing over the spillway at Gatun Dam is impregnated with the decomposition of organic matter, made evident in the drift which is passing over the ogee. But under the normal flow at locks and spillway, when the Canal is in operation, and with the supply of fresh water from the Chagres and other streams tributary to the lake, the surface stratum will become less objectionable. The potability, however, of the lake water will not be dependent on this possibility. The system of aeration and filtration to be installed at Mount Hope has been devised to make potable even the stagnant and malodorous waters of the lake, were that necessary; while automatic regulation of the headgates at the tunnel will make the Gatun Lake water secondary and auxiliary to the supply in Brazos Brook reservoir. The former will be used only when the latter runs low.

Rainfall from November 1 to 23, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon	1.57	4	5.69
Balboa	1.53	11	5.49
*Miraflores	4.70	11	9.16
Pedro Miguel	2.91	11	7.69
Rio Grande	1.31	11	6.40
<i>Central Section—</i>			
Culebra	1.78	23	7.27
*Camacho	1.05	15	5.36
Empire	1.35	23	6.73
Gamboa	1.21	6	6.27
*Juan Mina	2.02	8	10.15
Alhajuela	1.27	8	7.60
*El Vicio	1.60	6	6.26
*Gorgona			6.60
*Frijoles	1.74	7	13.73
*Trinidad	3.73	2	14.92
*Monte Lirio	1.52	3	11.80
<i>Atlantic Section—</i>			
Gatun	1.58	2	11.77
*Brazos Brook	3.02	6	16.26
Colon	2.94	4	15.17
Porto Bello	3.81	11	115.29

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., November 22.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending December 4, 1912. (75th meridian time):

DATE.	Low	High	Low	High
	A.M.	A.M.	P.M.	P.M.
November 28		5.42	12.08	6.15
November 29	12.32	6.28	12.58	7.05
November 30	1.24	7.21	1.50	8.00
December 1	2.23	8.20	2.49	9.02
December 2	3.50	9.28	3.55	10.10
December 3	4.38	10.45	5.04	11.18
December 4	5.45	12 m	6.10	.....

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, November 23, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigia.	Alhajuela	Gamboa.	Gatun Lake
Sun., Nov. 17	127.4	93.6	56.1	55.9
Mon., Nov. 18	127.2	93.5	55.8	55.7
Tues., Nov. 19	127.4	93.6	55.8	55.6
Wed., Nov. 20	127.2	93.4	55.6	55.4
Thurs., Nov. 21	127.2	93.4	55.5	55.3
Fri., Nov. 22	127.0	93.3	55.4	55.2
Sat., Nov. 23	131.8	96.0	55.4	55.1
Height of low water to the nearest foot.	125.0	91.0	44.0	

NEW LAND NEAR BALBOA.

Swamp East of Proposed New Piers to be Reclaimed by Hydraulic Filling.

The spoil discharged by pipeline suction dredge No. 85, which is excavating for the approach to the proposed new piers of the inner harbor at Balboa, is being used in the reclamation of the swamp immediately east of the site of the railroad yard which will be constructed along the inner ends of the piers. The yard will occupy a large part of the fill made for the east toe of the abandoned Sosa Dam, while the greater part of the west toe, on which the present sand track runs, will be excavated for the construction of the piers. The swamp to be reclaimed extends along the east toe of the dam from the Balboa branch of the Panama railroad, by which it is bounded on the south, to Diablo Hill, and is bounded on the north and east by the main line of the railroad and the Balboa wye. It covers an

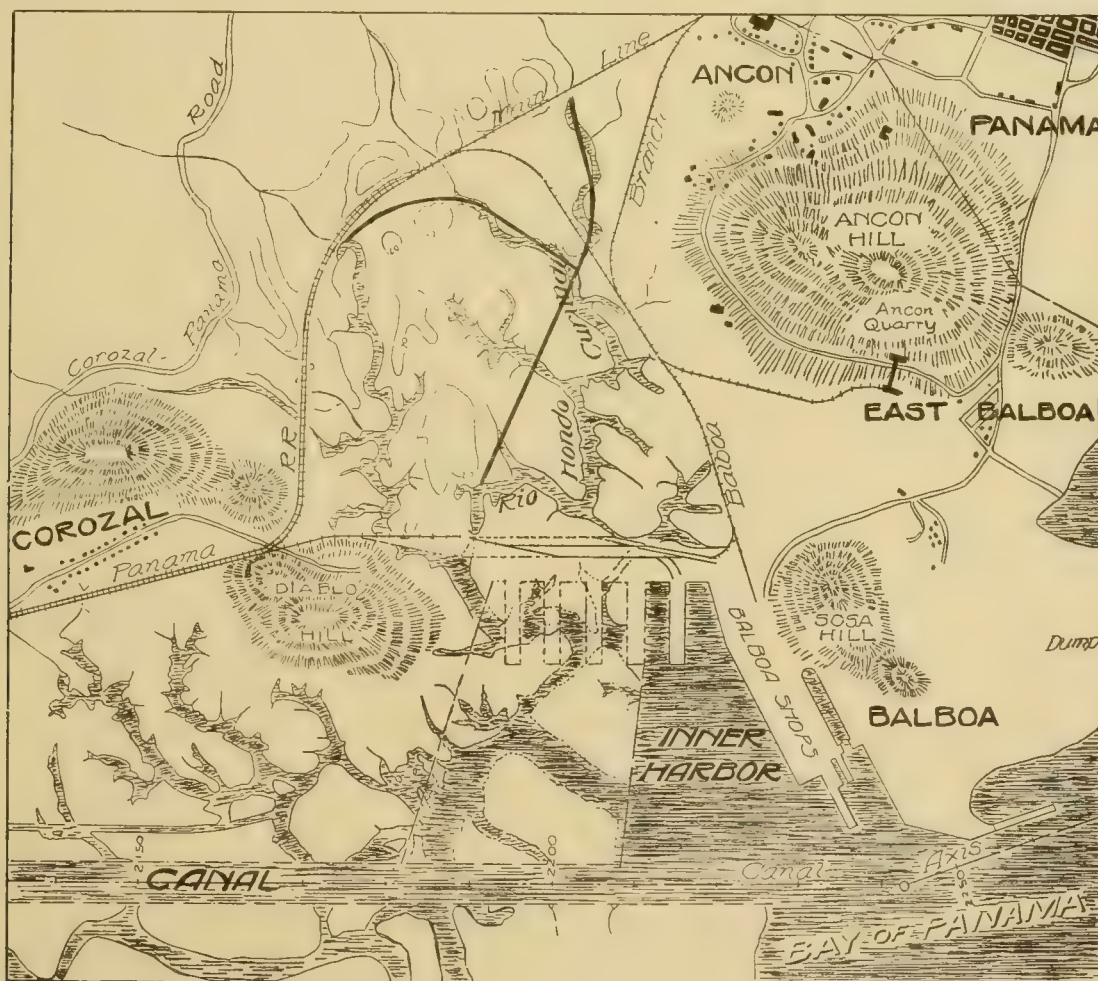
area of 400 acres and about 5,000,000 cubic yards of material will be used in raising the surface to reference 15. Its surface is now at about 7 feet above mean sealevel, so that a part of the swamp is subject to tidal inundation. The extent of flooding by tides is interfered with by the toes of Sosa Dam, as water can flow in only through the gaps left for the passage of the Curundu River and the Hondo River, both of which flow across the swamp.

The Curundu enters the swamp through a trestle near the south end of the Balboa wye, from a drainage channel direct through the dry filling being carried on within the triangle east of the wye. Beginning at the trestle a drainage ditch will be cut to the west, for a straight distance of 2,200 feet, subtending meanders of the Curundu, into which the channel will discharge about 1,500 feet from the point at which it will debouch into the harbor. This ditch will be 5 feet wide at bottom,

which will be 5 feet below sealevel, and with a slope of banks as steep as the material will allow.

About 350 feet from the trestle, this main ditch will be joined at right angles from the north by a ditch 5 feet wide at bottom, with elevation at zero, which is to extend from near the point at which the Hondo river crosses the Panama railroad, along the railroad for several hundred feet, thence to the west to a stretch of 1,500 feet direct to the main drain. The length of this ditch will be about 2,200 feet.

The drains will be protected by timber dikes with spillways at desirable intervals to allow the flow of spoil-laden water pumped into the swamp. Their construction will require about 30,000 cubic yards of excavation, at an estimated cost of \$22,500. An orange-peel crane, mounted on skids, will begin work shortly on the main drain, and its excavation will be supplemented by task work.



RECLAIMING LAND AT PACIFIC ENTRANCE.

Area bounded by railroad tracks and dock system is to be filled. Direction of the Canal is between north and northwest.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, engineers, and chauffeurs will be held by the Board of Local Inspectors at the Administration Building, Ancon, on Wednesday, December 4, 1912. All applicants for licenses as chauffeurs must procure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination.

All applicants for examination must be present at the Administration Building at 8 a. m., with papers in proper form. In addition, each applicant for chauffeur's license must appear with an automobile and demonstrate ability to operate it.

Obituary.

John J. Purcell, an employe of the Mechanical Division living at Gorgona, was killed on November 19, by falling from the rear

end of a Lidgerwood unloader on the Panama railroad relocation dump No. 6. He was 44 years of age, married and had been on the Isthmus nearly five years, coming here from Pennsylvania. He is survived by his wife living at Gorgona.

Marshall Wells, Manager of the Bayano River Lumber Company, living on the Bayano River, died in Ancon Hospital on November 12. He was 60 years of age, married, and had been on the Isthmus a year and a half.

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

The autumn meeting of the Executive Board of the Canal Zone Federation of Women's Clubs was held at the Hotel Tivoli, on Friday afternoon, November 22. Among the reports of the officers was one in regard to the Federation's ward, Elysium James, now in the Perkins Institute for the Blind, in Boston. The boy is reported to be doing well in his work and as happy in his life. The Federation library is now in use in the Cristobal Union Sunday school where it has been for the past year. The collection of pictures in on exhibition in Empire school building. Correspondence with regard to the library should be addressed to Mrs. Carl H. Elliott, Cristobal, and in regard to the pictures, to Mrs. M. E. Smith, Empire. The last of the consignment of Federation pins has been sold; any one wishing to purchase pins is requested to notify the treasurer, Mrs. J. E. Westberg, Empire, with whom arrangements may be made for ordering pins. The Federation history is completed and will be submitted to a committee consisting of the recording secretary, Mrs. Carl H. Elliott, of Cristobal, Mrs. A. O. Herman, of Gorgona, and Mrs. H. R. Trask, of Culebra. It will be presented by this committee at the annual meeting. It was decided to hold the annual meeting at the Tivoli Hotel, in January, the date to be fixed later. The meeting will be, as usual, an all-day session; a business meeting in the morning and program in the afternoon, followed by a reception. Mrs. Thomas Edwin Brown, Jr., was appointed chairman of the committee on arrangements. She will appoint sub-committees for the different departments of work. It is desired to bring together at this meeting all Canal Zone club women, and to this end an invitation is herewith extended to all those women on the Isthmus who were members of the federated Canal Zone clubs in the years 1907 and 1909. The meeting will be made attractive to these charter members of clubs and of the federation. No further invitation is required and it is desired that such club women as come under the head above designated send their names to Mrs. Thomas E. Brown, Jr., Cristobal, in order that arrangements may be made for their transportation and entertainment as guests of the Federation. The year book of the Cristobal Women's Club has been issued and the programs are being carried out according to its schedule. The meetings of November have been as follows: November 6, general meeting, subject "Central America", talk by Mr. Lee; November 13, home department meeting, subject: "System in the Home," papers by Mrs. Carl H. Elliott and Mrs. Frederick Mears, piano solo by Miss Leyland; November 20, art and literature department, subject, "Wedgwood and Royal Doulton," paper by Mrs. William Penley, vocal solo by Miss Margaret Smith.

The Gatun Woman's Club held its meeting on Tuesday afternoon, November 26, at the home of Mrs. Charles H. Stoddard. The program was under the home department. The following chairmen of the departments have been appointed: Mrs. J. H. Stevenson, home; Mrs. Hanna, philanthropy; Mrs. Stoddard, art and literature; and Mrs. Gabler, education. The president, Mrs. E. J. Neville, is in charge of the current

events class which is held in connection with the business meeting on the first Thursday in each month. The next meeting of the club will be held at the home of Mrs. Hanna.

A meeting of the Empire Women's Club was held at the Commission clubhouse on Tuesday afternoon, November 19. The question of work for the current year was discussed, and it was decided to divide the club into three departments; history and current events, with Mrs. D. L. Prather as chairman; art and literature, with Mrs. H. E. Smith, as chairman; and home, with Mrs. J. E. Westberg as chairman. The meetings will be held in the Commission clubhouse on the first and third Thursdays in each month. On December 5, the program will be under the history and current events committee. The subject to be taken by this committee is, "Panama and the Panama Canal." Members are requested to be prepared to give a five minute talk on some phase of the Canal work. At each meeting roll call will be responded to with a short item on current events. The program on Thursday, December 19, will be business and current events. The first meeting in January will be under the home and philanthropy department. Further details of the meetings for the remainder of the year will be given later.

PERSONAL.

The Hon. Henry L. Stimson, Secretary of War, accompanied by Mrs. Stimson, Miss Helen Taft, Dr. Lewis A. Stimson, Felix Frankfurter, law officer of the Bureau of Insular Affairs, and Capt. John McA. Palmer, of the General Staff, U. S. A., left on the *Colon* on Tuesday night for New York via Key West. While on the Isthmus, Secretary Stimson and his party inspected all phases of the Canal work, the locks and dam at Gatun, the locks and dams at Pedro Miguel and Miraflores, and the fortifications at both entrances. At Pedro Miguel he witnessed the operation of one of the gate valves in the lock water supply culverts, and both at Gatun and Pedro Miguel he saw leaves of the lock gates operated.

Mr. W. G. Comber returned to the Isthmus on the *Atenas* on November 21, from his vacation in the United States and Europe.

Mr. H. O. Cole, Resident Engineer of the Pacific Division, accompanied by his wife and daughter, returned to the Isthmus on the *Colon* on November 20.

Mr. C. E. Weidman returned from his vacation on the *Atenas*, arriving at Colon on November 21.

Thanksgiving in the Churches.

The Canal Zone churches celebrated Thanksgiving Day, on Sunday November 24. At St. Luke's Hospital chapel the service was at 10 a. m. The Rev. Henry A. Brown preached and the offertory anthem was sung by Miss Lucille Morley. At Empire the service was held in the Commission chapel with the Rev. A. A. Nellis as preacher, at 10 a. m.; and at Culebra the service was in the evening at 7.30 o'clock. At the Gorgona clubhouse a service was held in the evening when the music was furnished by the Gorgona chorus.

At St. Mary's church, Empire, there will be a service on Thanksgiving Day at 10.45 a. m. The Rev. H. R. Carson will preach. The offering at this service will be for the aged and infirm clergy fund of the Episcopal church in the United States.

On Sunday, November 17, the harvest

thanksgiving was celebrated in the West Indian churches of the Isthmus, in accordance with the custom in the church throughout the British Islands. Special services were held in Christ Church, Colon Beach, at the Baptist churches in Colon, at St. Paul's church, Panama, and at the mission churches in Empire, Las Cascadas, and Bas Obispo. The churches were decorated with fruits, flowers and vegetables. There was special music, and in each instance the offering was large; the largest being that presented at St. Paul's which amounted to \$100. These offerings are used in connection with the work of the local missions.

Thanksgiving services will be held in the chapel at Paraiso on Wednesday evening, November 27, and on Thanksgiving night at the social hall at Pedro Miguel.

Changes have been made in the personnel of the Wesleyan church clergy on the Isthmus; the Rev. E. G. Cooke, for many years resident pastor in charge of the church of Colon, has left to take up mission work in Florida, and the Rev. H. Britton King of Panama, has removed to Colon where he is residing in the parsonage in the church and school building.

The Woman's Altar Guild of St. Luke's Hospital chapel will meet at the home of Mrs. Frank Feuille, Ancon Hill, on Tuesday, December 3 at 3 p. m. This will be the only meeting in the month, and it is purposed to arrange for the Christmas gifts and charities at this time.

Church Notes.

The Ladies' Aid Society of the Cristobal Union Church held its second meeting for the season on the second Tuesday in November. The program consisted of congregational singing, devotional exercises and a report of the delegates to the Empire Missionary Convention in October. The feature of the afternoon was an address on practical work among the Indians of Central America, by Miss Annie Coop. The collection taken at the close of the meeting was given to Miss Coop to aid her in her work. The next meeting of this society will be held at the Union Church on Tuesday afternoon, December 10. The society extends an invitation to all women interested in mission study to be present. The subject of the program will be Korea.

Red Cross Christmas Seals.

The sale of Red Cross Christmas seals is advancing satisfactorily, as shown by a canvass made last week. Remittances have been made from several of the districts, showing that the allotments of 5,000 have been readily disposed of. At the carnival at Gorgona on Saturday evening, November 16, the Red Cross booth sold 2,900 seals; from Colon 7,000 seals have been reported sold. During the past two weeks, interest in this department of Red Cross effort has been stimulated by the exhibition of a series of moving pictures showing specific results achieved in the tenebrament districts in large cities and the relief of those suffering from tuberculosis, from the proceeds of the sale of Red Cross seals. Eighty-seven and one-half per cent of the proceeds of the sales is retained in the chapter and applied to local relief of those suffering from tuberculosis. If, therefore, the entire allotment to the Isthmus, 1,000,000 is sold, the sum of \$875 will be kept by the Canal Zone chapter for that purpose.

Marines Back Home.

The U. S. S. *Buffalo* arrived at Panama Road on November 25, and after three days in quarantine will discharge her passengers, 700 men of the United States Marine Corps, on Thanksgiving Day. The detachment is under command of Lieut.-Col. Pendleton, and includes the 3d Battalion under Major Smedley D. Butler now stationed at Camp Elliott. The 3d Battalion left Panama for Nicaragua August 11, and took part in the chief battles and skirmishes against the Nicaraguan revolutionists.

Canal Zone Rifle Club.

On Sunday, November 24, the Canal Zone Rifle Club held the first of a series of shoots to determine the individual rifle champion shot of the club. Only two ranges were shot, 300 and 600 yards. Mr. McLellan of Corozal was the high score man and now leads by four points in the competition. The following scores were made:

Name.	Three hundred	Six hundred	Total.
J. C. McLellan.....	43	47	90
Jas. Blaisdell.....	42	44	86
G. C. Ferris.....	42	44	86
J. N. Haynes.....	42	44	86
J. Bernson.....	40	45	85
F. W. Walraven.....	45	39	84
J. H. Kane.....	39	41	83
A. Kennedy.....	42	40	82
Max Boggs.....	39	42	81
W. L. Greene.....	41	39	80
J. L. Hoffman.....	39	40	79
W. W. John.....	42	31	73

The next shoot will be at the 1,000 yard range, and will be a stiff test of the abilities of each rifleman.

The winner of the Garlington medal shoot on November 10 was Mr. Walraven of Las Cascadas with a score of 84, W. W. John of Ancon being second with 80.

Master Masons.

All Master Masons in good standing are cordially invited to participate in forming Canal Zone Lodge A. F. & A. M. under dispensation from Grand Master of the State of Massachusetts, at Ancon lodge hall, on Saturday November 30, 1912 at 8.30 p. m.

Independent Order of Panamanian Kangaroos.

The regular monthly meeting of the Kangaroos will be held at Empire, Sunday, December 1, 1912, at 12 noon.

This order was recently consolidated into one court, with temporary headquarters at Empire.

All dues should be paid to Mr. E. W. Stollberg, Comptroller, Empire, Canal Zone.

Misdirected Letters.

ANCON, C. Z., November 27, 1912.

The following insufficiently addressed letters originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressee:

Andrus, A. C.	Lavergne, Frank Da
Appleby, Carl	Lee, K. B.
Austin, L. D.	Lewis, Mrs. F. J.
Bullick, John	Mack, Mrs. L. W. (pkg.)
Burns, James M. (2)	Maxson, Herbert Burdell
Bennet, Hon. William S.	2 Miley, Fred B.
Binham, Mr. & Mrs. J. pk.	Miskimen, Dr. Frank S.
Campbell, O. G.	Neafey, Wm.
Cannon, Mrs. C. E.	Nieves, Vicente
Carlson, Mrs. Ethel	Nilius, Bruno
Cohn, August	Ogelsby, C. A.
Colgan, L. B.	Otis, Albert N.
Conway, Mrs. Ramona de	Plummer, Manfred
Dickinson, Leslie	Schnell, Chas.
Donnelly, Wm. D.	Shimik, E. H.
Doran, Thos. J.	Smith, Mrs. M.
Fagin, H. F.	Stanton, J. M. (2)
Fox, Alvin	Stanffer, Titus
Griffin, Aloysius	Talor, Miss Oliver
Huff, F.	Thomas, J. H.
Humphrey, Horatio	Tilley, Less
Janus, R. J.	Warner, J. G.
Jurlien, Mrs. C.	Whitver, Delmore
Kromer, Mr. Wilson	Wignall, Amos W.
Lambert, Harry	Wood, Emory

COMMISSION CLUBHOUSES.**Activities of the Young Men's Christian Association.****GENERAL.**

Moving picture dates for the week, December 3 to 7, are as follows: Monday, Corozal; Tuesday, Empire; Wednesday, Culebra; Thursday, Cristobal, Friday, Gorgona, Saturday, Gatun.

The standing of the teams in the tenpin tournament on November 25, was as follows:

Team.	Won.	Lost.	P. C.
Gatun.....	17	7	.708
Empire.....	16	8	.666
Cristobal.....	13	11	.540
Culebra.....	9	12	.429
Corozal.....	8	16	.333
Gorgona.....	6	15	.286

The standing of the teams in the basketball league on November 25, was as follows:

Team.	Won.	Lost.	P. C.
Empire.....	5	0	1.000
Corozal.....	4	2	.666
Gorgona.....	2	3	.400
Gatun.....	2	4	.333
Cristobal.....	0	4	.000

CULEBRA.

Culebra won two out of three games in the bowling match with Corozal on Saturday night, November 23, with the following scores:

	Corozal.	Culebra.
Dalton.....	117 132 174	Case..... 192 167 017
Bordt.....	116 156 171	Meneg..... 157 193 140
Wilms.....	144 147 120	Cushing..... 172 111 117
Souder.....	133 128 149	Anderson..... 133 162 175
Coonly.....	171 162 166	Dougherty..... 143 140 173
Total.....	681 725 780	797 773 775

EMPIRE.

There was an attendance of 175 at the first meeting of The Forum on Sunday night, November 24. There was music by the mixed quartet composed of Mrs. Faure, Mrs. Boyd, Mr. Ross and Mr. Case; solos by members of the quartet. The address was by F. A. Gause who took for his subject "Literature and Life." The next meeting of The Forum will be on December 8.

Harry Pearson won the November handicap pool tournament. There were twenty men entered. A new set of ivory cue balls has arrived from the States.

The Culebra chess team composed of Messrs. Wilson, Vogel, Warner, McClure, Rose, Shropshire, and Dubois played the Empire team on Saturday night. November 24 at Empire. The Empire team won nine and one-half games, the Culebra team winning six and one-half games. The Empire team was composed of Messrs. Pulsifer, Smith, Knight, Sherrard, Caldwell, Goolsby, Verner, and Newbold.

The first meeting of those interested in the class for "First Aid to the Injured" will be held on Friday night, November 29. All interested are invited to join.

The first game of the handball tournament was played on Friday, November 23, between Mr. Kuntz and Mr. Diedrick. The latter won by the score of 21 to 14. The next games will be played Friday, November 29.

GORGONA.

Over three hundred people attended the motion picture show on Tuesday evening. The next show will be on Thanksgiving, when there will be open house at the Y. M. C. A. Pictures in the afternoon at 2.30 and again in the evening at 7.45 p. m. and special music will compose the program.

Three hundred and fifty people attended the Thanksgiving service on Sunday evening, November 24. There was an address by Mr. Verner, subject, "The Man That Came Back." The chorus gave its first recital and sang the following songs: "Now the Day is Over," "Holy Spirit," "For the Beauty of the Earth," "Largo by Handel; and "The Heaven's Declaring," from "Creation."

Sunday, December 1, at 7 p. m., after the band concert, The Forum will be opened. Mr. F. A. Gause will deliver an address on "Life and Literature." Special music will be furnished.

The Ragtime Tournament is nearly completed. A handicap tournament will be started on December 1st, based on the games rolled between November 1 to 23. Special prizes will be given. High score for singles in the ragtime tournament are Dense 597 and Sims 578. *Doubles*—Sims and Keppler, 1,123, and Calloway and J. Stewart, 1,051.

Gorgona was defeated in basketball on Saturday evening by Empire, 31 to 21. The players were—*Gorgona*—Ridge, Morrison, Christian, Stevens, Carpenter. *Empire*—Sawyer, Rowan, Hepler, Greening, Milbe.

Gatun will play at Gorgona on November 30.

Plans are being made for the coming Christmas entertainment and it promises to be one of the best ever held.

GATUN.

Gatun defeated Corozal in an interesting game of

basketball at Gatun on Saturday, November 23. Score—first half, Gatun 13, Corozal 2; final, Gatun 27, Corozal 3. The line up follows:

27, Corozal 5. The line up follows.	
Gatun.	Corozal.
Huber	R. F. Wright
Whiston	L. F. Roberts
Purchase	C. Morris
Fitzpatrick	R. G. Porter
Conley	L. G. McCathern & Knealy
Goals: Gatun—Whiston 6, (3 field, 3 foul) Purchase, 4 (field), Huber 1, (field), Corozal—Morris 1, (field), Roberts 1, (foul). Fouls: Gatun—Huber 1, Fitzpatrick 4. Corozal—Roberts 3, Morris 2, Porter 3, McCathern 1. Referee, Sartor. Umpire, Neely. Time-keeper, Forman. Scorers; Webb, Gatun; Dwelle, Corozal. Attendance, 200.	

By taking all three games of tenpins from Gorgona on Saturday night, November 23, Gatun again takes first place in the Isthmian tournament. The scores were, as follows:

Gatun.	Gorgona.
Swallow.....	187 170 187
Omeara.....	187 173 168
Rabbitt.....	175 154 140
Hodges.....	182 180 172
Barte.....	157 161 160
King.....	183 149 169
Arnold.....	180 160 143
Sims.....	179 196 160
Stoehr.....	137 113 158
Roper.....	156 142 145

888 838 827

835 760 775

The first meeting of the Forum held on Wednesday evening, November 21, was a decided success. In addition to the lecture by Mr. F. A. Gause, vocal quartette and solo numbers were given. There were 180 in attendance. The speaker for the next meeting will be Mr. W. Benton Childers, Superintendent of the McClintic-Marshall Company.

An inauguration ceremony will be held at the clubhouse on Saturday evening, November 30, when the various candidates recently elected to political offices in Gatun will be inducted into office. The Tenth Infantry Orchestra will furnish music. Everybody in Gatun is cordially invited to attend.

Following is the standing of the men's athletic contest:

Martinoff, 995; Loulan 822; Straub 685; Jendres 508; Flynn, 337; Miller, 296; Baeder, 280; Mitchell, 240; Daniels, 215; Ourand, 181; Albright, 161; Huber, 146; Atkinson, 129; Jensen, 123; McMahon, 116; Ogilvie, 100; Porter, 86; Dillon, 85; Carpenter, 84; Dickson, 66; Harper, 64; Tutthill, 64; Corson, 55; Curry, 50; Noble, 21; Fomon, 20.

Following is the standing of the boys' athletic contest: Meis, 1,169; Cummings, 1,107; Jervey, 1,066; Sisson, 947; Quinn, 921; Waid, 870; Gray, 850; Bethea, 717; Griffith, 714; Billett, 681; Loulan, 651; Neville, 587; R. Appelton, 560; Carkeet, 452; Witt, 433; Kerr, 374; Sibert, 264; Bath, 222; DePoorter, 132; Graham, 82; Walsh, 185.

CRISTOBAL.

At the moving picture show on Wednesday night, November 20 there was an attendance of 185. The next show at Cristobal will be on Saturday, November 30.

The following regulation was made by the local council at the meeting November 20: Children under 15 years of age will be excluded from the second floor after 5 p. m. on all occasions unless accompanied by adults. This regulation is not to conflict, however, with the rules of the boys' department.

Thursday being Thanksgiving, the pool and billiard room will be open for free pool from 8 a. m. until 6 p. m. and the bowling alleys from 8 a. m. until 11 a. m. and from 1 to 5 p. m.

"Open house" will be held again on Friday from 8 until 11 p. m. The mixed quartet will furnish special music. All men are cordially invited to come.

Saturday night the home basketball team plays at Empire.

Handball may be played on Monday and Thursday nights.

On Saturday night the Empire bowling team took two out of three games from the local team with the following scores:

Empire.	Cristobal.
Gustavson.....	189 148 154
Potter.....	175 173 184
Edwards.....	177 180 150
Pearson.....	153 159 182
Huson.....	166 183 182
Barrett.....	192 142 194
Burns, T.....	126 141
Buser.....	137
Collins.....	154 157 172
Bullard.....	193 170 172
Louch.....	161 210 177

Total.... 860 843 852

826 816 856

On Thursday night, November 21 the "married folks" duckpin tournament was held. A Thanksgiving turkey was given as first prize and a chicken as second.

The next "married folks" tournament will be held on December 21. At that time, one game each of duckpins, candlepins and tenpins will be rolled.

Band Concert.

A concert will be given by the Isthmian Canal Commission band at Gorgona, C. Z., on Sunday, December 1, at 6 p. m.

The next concert will be given at Pedro Miguel December 8, at 4.30 p. m.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others 8 a. m. to 1 p. m., and 3 to 7 p. m.

No material changes have been made in the prices of cold storage commodities sold at the Commissary stores since the publication of the price list last week.

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Colon and Cristobal, during the two weeks ending November 23:

Haakon VII, November 10, from St. Marys, Ga., with 1,406 pieces piling for stock; 6,223 cross-ties for Panama Railroad Company; 10,878 pieces yellow pine lumber for Mechanical Division.

Turrialba, November 10, from New York with 60 cases electrical material for superintendent of erection.

Snesdal, November 12, from Baltimore, with 461 cases brick machinery, 54 packages spillway machinery, 197 crates castings (racks), 26 cases castings (haws-pipe) for superintendent of erection; 467 pieces steel plates, 12,000 cases dynamite, for stock; 91 tons pig iron, 850 car wheels, for Mechanical Division; 188 bundles steel bars, for Pacific Division; 900 bundles steel bars, for Atlantic Division; 225 bundles steel bars, for Division of Fortifications; 353 packages steel emergency dams.

Madapan, November 14, from New York, with 150 cases paper, for stock; 57 crates copper sheets, for Division of Fortifications; 24 crates electrical material, for superintendent of erection.

Grib, November 14, from Mobile, with 19,000 cross-ties, for stock.

Abangarez, November 15, from New Orleans, with 1,387 bales hay, 269 bales rice straw, 286 pieces piling, 20 drums cylinder oil, 240 cases cup grease, 160 cases gear grease, for stock; 183 pieces yellow pine lumber, 13 packages electrical supplies, for Mechanical Division; 647 barrels paving brick, 12 crates concrete machinery, for Panama Railroad Company.

Cristobal, November 15, from New York, with 151,480 bags cement for stock.

Allianca, November 15, from New York, with 551 crates tile slabs, 26 cases plaster ornaments, 16,500 pieces tile, hollow, for Panama Railroad Company; 41 reels cable, 162 cases electrical machinery, for superintendent of erection; 25 crates ranges, 50 cases lubricating oil, 25 crates galvanized buckets, 300 cases turpentine, 100 barrels alum, 10 reels rope, 12 cases writing paper, for stock; 487 barrels pyrethum powder, 100 cases pyrethum powder, for Sanitary Department; and a miscellaneous cargo, the whole consisting of 18,680 pieces, weighing 525 tons.

Tines, November 17, from New York with 30 barrels rosin, stock; 3,400 pieces hollow tile, Panama Railroad Company; 24 cases solder, superintendent of erection.

Thames, November 18, from New York, with 33 cases rubber hose, for stock.

Zacapa, November 20, from New York, with 30 barrels rosin, 48 bundles wheelbarrow parts, 1,590 pieces steel pipe, 436 bundles steel pipe, for stock; 13 cases cable, for Mechanical Division, 25 cases electrical material, for superintendent of erection; 6 cases machinery, 2 pieces machinery for Pacific Division.

Trebia, November 20, from New York, with 205 drums gasoline, 470 cases gasoline, 144 blasting caps, for stock; 16,000 bags cement, for Division of Fortifications; 20,000 bags cement, for Atlantic Division; 82,387 bags cement for Pacific Division.

Colon, November 20, from New York, with 15 cases envelopes, 85 cases printing paper, 80 cases brake shoes, 38 drums lime, 300 pigs lead, 334 bundles steel bars, 16 kegs chisels, 100 cases bronze wire cloth, 19 cases rubber hose, 400 bales shovels, 74 pieces railroad switches, for stock; 37 cases rubber packing, 45 cases cable splicing sleeves, for superintendent of erection; 36 crates stove pipe, 60 cases brake shoes, for Mechanical Division; 20 cases tables, 7 crates tables, for Panama Railroad Company, and a miscellaneous cargo, the whole consisting of 2,231 pieces, weighing 212 tons.

Atenas, November 21 from New Orleans, with 348 barrels, paving brick, for Panama Railroad Company; 5 packages hoisting machinery, for Division of Fortifications; 1,585 pieces yellow pine lumber, for Mechanical Division; 883 pieces yellow pine, 522 bales rice straw, 70 cases paint, 32 crates stove pipe, 3,643 pieces cross-ties, 161 pieces piling, for stock.

OFFICIAL CIRCULARS.

Hotel Coupon Books for Cash.

CULEBRA, C. Z., November 21, 1912.

CIRCULAR No. 256-H:

Effective December 1, 1912, hotel coupon books will be sold for cash at all commissaries where the cash sale of commissary coupon books has been installed.

Effective December 1, 1912, the sale of hotel books for cash by I. C. C. issuing clerks, except by the issuing clerk of the Quartermaster's Department, Culebra, will be discontinued.

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Acting Division Engineer Atlantic Division.

CULEBRA, C. Z., November 21, 1912.

CIRCULAR No. 464:

During the absence on leave of Lieutenant Colonel Wm. L. Sibert, beginning this date, Major Chester Harding is designated as Acting Division Engineer of the Atlantic Division.

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Acting Superintendent of Erection.

CULEBRA, C. Z., November 20, 1912.

To ALL CONCERNED:

Effective November 21, 1912, during the absence on leave of Mr. Ernest E. Lee, Superintendent of Erection, Mr. F. C. Clark will be in charge of Erection of the Electrical and Mechanical Engineer Sub-division, First Division, as Acting Superintendent of Erection, and I will devote some time to special features of the work.

EDW. SCHILDHAUER,

Electrical and Mechanical Engineer.

Approved: II. F. HODGES,

Assistant Chief Engineer.

Sale at Public Auction.

OFFICE OF THE CHIEF QUARTERMASTER.

CULEBRA, C. Z., November 25, 1912.

There will be sold at public auction, by the District Quartermaster at Ancon, Canal Zone, at his office, at 2 p. m., Wednesday, December 4, 1912, to the highest bidder for cash the following Isthmian Canal Commission property:

1 38 cal. Colts revolver	1 Hand bag
Army model, with 16	1 Rain coat
cartridges	1 Hammock
2 Shirts, woolen	1 Umbrella
5 Mosquito bars	1 Alcohol lamp
3 Pairs spurs	1 Coffee pot
1 Pair riding pants	1 Tea Kettle
1 Pair pants	1 Receipt book
1 Pair shoes	1 Copy election laws
1 Pair puttees	1 Spanish dictionary
1 Pair leggings	1 Oil cloth
1 Suit case, fiber	

The Government reserves the right to accept or reject any or all bids.

For further information apply to the District Quartermaster, Ancon, C. Z.

R. E. WOOD,
Assistant Chief Quartermaster.

Sale of Public Buildings at Nombre de Dios.

OFFICE OF THE CHIEF QUARTERMASTER.

CULEBRA, C. Z., November 14, 1912.

Sealed proposals will be received at this office until 3 p. m., Saturday, December 14, 1912, and then opened, for the purchase of any or all buildings, including plumbing, owned by the Commission at Nombre de Dios. List of buildings and full information will be furnished upon application to any district quartermaster, or at this office. Proposals must be accompanied by five percentum (5%) of amount bid. The Government reserves the right to accept or reject any or all bids. Envelopes containing proposals should be endorsed "Proposal for purchase of buildings," and addressed to Col. C. A. Devol, Chief Quartermaster, Culebra, C. Z.

Sale of Surveying Instruments, Compasses, and Ship's Log.

OFFICE OF DEPOT QUARTERMASTER.

MOUNT HOPE, C. Z., November 19, 1912.

Sealed bids will be received at the office of the Depot Quartermaster, Mount Hope, C. Z., until 2 p. m., December 7, 1912, when they will be opened in the presence of attending bidders, for any or all surveying instruments, compasses, and ship's log now on hand in the storehouse for obsolete material. These instruments may be seen on any working day between the hours of 7 to 11 a. m., and 1 to 5 p. m., on application at this office. The right is reserved to reject any or all bids, or any combination of bids. Bids must be sealed and plainly marked: "Proposal to purchase surveying instruments," addressed to the Depot Quartermaster, Mount Hope, Canal Zone.

C. NIXON,
Depot Quartermaster.

Married.

SNIDER LONG—On Thursday morning, November 21, in the Union Church, Cristobal, Miss Lucille Leona Long, of San Antonio, Texas, to Mr. Lyman Edgar Snider, of Tyroon Pa. The Rev. Carl H. Elliott, officiating. Isthmian residence, Porto Bello.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL

Allianca.....	P. R. R. Tuesday.....	Dec. 3
Colon.....	P. R. R. Monday.....	Dec. 9
Advance.....	P. R. R. Saturday.....	Dec. 14
Panama.....	P. R. R. Friday.....	Dec. 20
Allianca.....	P. R. R. Friday.....	Dec. 27

CRISTOBAL TO NEW YORK.

Advance.....	P. R. R. Monday.....	Dec. 2
Panama.....	P. R. R. Sunday.....	Dec. 8
Allianca.....	P. R. R. Sunday.....	Dec. 15
Colon.....	P. R. R. Saturday.....	Dec. 21
Advance.....	P. R. R. Thursday.....	Dec. 26
Panama.....	P. R. R. Thursday.....	Jan. 2
Allianca.....	P. R. R. Wednesday.....	Jan. 8

NEW YORK TO COLON.

Santa Marta.....	U. F. C. Wednesday.....	Nov. 27
Prinz August Wilhelm.....	H.-A. Saturday.....	Nov. 30
Turrialba.....	U. F. C. Saturday.....	Nov. 30
Prinz Sigismund.....	H.-A. Saturday.....	Dec. 7
Magdalena.....	R. M. Saturday.....	Dec. 7
Prinz Joachim.....	H.-A. Saturday.....	Dec. 14
Oruba.....	R. M. Saturday.....	Dec. 21
Prinz Eitel Friedrich.....	H.-A. Saturday.....	Dec. 21
Prinz August Wilhelm.....	H.-A. Saturday.....	Dec. 28

COLON TO NEW YORK.

Zacapa.....	U. F. C. Thursday.....	Nov. 28
Prinz Joachim.....	H.-A. Monday.....	Dec. 2
Sixaloa.....	U. F. C. Tuesday.....	Dec. 3
Almirante.....	U. F. C. Thursday.....	Dec. 5
Prinz Eitel Friedrich.....	H.-A. Monday.....	Dec. 9
Tagus.....	R. M. Tuesday.....	Dec. 10
Carrillo.....	U. F. C. Tuesday.....	Dec. 10
Santa Marta.....	U. F. C. Thursday.....	Dec. 12
Prinz August Wilhelm.....	H.-A. Monday.....	Dec. 16
Turrialba.....	U. F. C. Tuesday.....	Dec. 17
Prinz Sigismund.....	H.-A. Monday.....	Dec. 23
Arcadian.....	R. M. Tuesday.....	Dec. 24
Prinz Joachim.....	H.-A. Monday.....	Dec. 30

NEW ORLEANS TO COLON.

Saramacca.....	U. F. C. Wednesday.....	Nov. 30
Abangarez.....	U. F. C. Saturday.....	Nov. 30
Cartago.....	U. F. C. Wednesday.....	Dec. 4
Atenas.....	U. F. C. Saturday.....	Dec. 7
Heredia.....	U. F. C. Wednesday.....	Dec. 11

COLON TO NEW ORLEANS.

Abangarez.....	U. F. C. Thursday.....	Nov. 21
Atenas.....	U. F. C. Thursday.....	Nov. 28
Heredia.....	U. F. C. Thursday.....	Nov. 28
Parismina.....	U. F. C. Thursday.....	Dec. 5
Saramacca.....	U. F. C. Thursday.....	Dec. 5
Abangarez.....	U. F. C. Thursday.....	Dec. 12

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers from New York on alternate Tuesdays, at 2 p. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston, and Santiago de Cuba, at 2 p. m. on sailing dates.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m. for Limon, via Bocas del Toro, on Tuesdays at 5 p. m.

The following ships arrived at, or departed from the port of Balboa during the week ending November 23:

Arrivals—November 17, *Manari*, from Buenaventura; November 18, *City of Sidney*, from San Francisco; November 20, *Mantaro*, from Callao; November 20, *Aysen*, from Valparaiso; November 20, *Seward*, from San Francisco; November 22, *Oberon*, from San Francisco.

Departures—November 17, *Ucayali*, to Callao; November 17, *Santa Maria*, to San Francisco; November 18, *Guatemala*, to Guayaquil; November 19, *Pennsylvania*, to San Francisco; November 19, *Salvor*, to San Francisco; November 20, *Quito*, to Guayaquil; November 21, *San Jose*, to San Francisco; November 23, *Manari*, to Buenaventura.

LOST—Bunch of keys, on November 20, somewhere on Panama railroad line between Colon and Panama. Finder will please return to any Panama railroad agent and receive reward.

LOST—In the Commissary at Pedro Miguel, on November 19, a pocket book containing a bunch of keys and some small change in silver. Finder will please return to House 86-C, Pedro Miguel, and receive reward.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, DECEMBER 4, 1912.

No. 15.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Erecting the Lock Gates.

Erecting lock gates is much like constructing an office building according to the modern style. The framework of steel girders is the background, and then comes the fixing of the steel covering, just as the stone or brick veneering is attached to an office building. On this account the work is in various stages of completion at one time—one gate may be completed, another half done, and others not yet begun. At present the erectors are working on all but four of the 40 leaves at Pedro Miguel, and on 12 of those at Miraflores. There are 92 leaves to the 46 gates on all of the Canal locks, and work is advancing on 70 of these. There are 18 leaves at Miraflores locks on which no erecting work has yet been done.

At various stages of the gate erection, various parts of the work have given the appearance of being the most difficult. At first it was believed that the erecting would present the greatest obstacle to completion on contract time, but this has been overcome, and the erecting is now going on satisfactorily. Then the reaming of rivet holes and the driving of the 5,750,000 rivets required were looked upon as the greatest obstacle, but this also has been practically overcome. Now the real crux of the situation lies in the finishing of the gates, that is the swinging into place, planing of the edges so that the leaves will fit watertight, and similar work. This part of the problem is being worked out satisfactorily.

The gate contractors now have a force of over three thousand men at work, over four hundred of whom are white, and skilled mechanics.

Gatun Lake and The Spillway.

Gatun lake reached its highest level on November 29, when the surface was 56.28 feet above sea level. Two days before, the sluice gates in the bottom of the concrete dam across the Spillway of Gatun Dam were opened, in order to draw the level of the lake down below elevation 50, and yet so great were the freshets of that week, due to heavy rains in the upper Chagres valley, that the water

steadily rose 1.1 feet until after the crest of the freshet had passed.

The level of the lake is being reduced in order that work may be finished on the concrete dam of the spillway. This dam consists of a concrete barrier, whose final height will be at 69 feet above sea level, and a series of crest gates erected upon it. The gates move up and down between concrete piers. There are two abutments and 13 piers, and therefore 14 waste ways. Prior to October 19 the concrete in the central section had been carried to +50 and that of the end sections to +69; since this date, construction has been confined to the end sections while the water passed over the central section. The work now before the spillway builders is to complete the central section to elevation 69 and to carry all the crest piers and abutments to the final height of 115 feet 6 inches during the first three months of the dry season. About 17,000 cubic yards of concrete must be placed.

After the concrete work is finished the crest gates and the machinery to operate them must be installed. The temporary sluice gates in the bottom of the concrete dam will be filled with concrete, and all the regulating of the lake surface will be done by operating the gates on the crest of the dam.

Heavy Freshet on Chagres River.

The Chagres River was swollen on November 28, Thanksgiving Day, with the largest rise which has occurred in it since that of December 3-4, 1910. Both freshets attained almost the same heights, as follows:

STATION.	Dec., 1910.	Nov., 1912.	Low Water
Vieja	150.9	150.0	125.0
Alhajuela	108.7	108.4	91.0
Gamboa	64.6	62.45	44.0

*Now dependent on Gatun Lake.

It is noticeable that during the recent freshet the rise at Gamboa was not as great, in proportion to that at the stations upstream, as was the case in the freshet of December, 1910. This is attributed to the backwater from Gatun Lake, which stood 11.2 feet above the old low water level at Gamboa, on November 28. The effect of the backwater in case of freshets has been a problem in connection with the dike across the north end of Culebra Cut, and the showing during the recent freshet is regarded as reassuring.

West Breakwater at Atlantic Entrance.

The outermost bent of the trestle for the west breakwater at Colon is to be driven at a point 11,763 feet from the beginning, which is at Toro Point lighthouse, on December 6. The trestle is double-tracked for about 11,000 feet, with the last several hundred feet single-track. The core of dry fill from the borrow pits at Toro Point has been completed, while nine-tenths of the dredge spoil is in place; and about one-seventh of

the armor of hard Porto Bello rock has been placed since the first bargeload was brought from the quarry on August 23, 1911. The output from the quarry has not kept pace with the demand and the facilities for placing it; only one of the two derrick barges equipped for placing armor on the breakwater has been in use. No. 1 will go to the Mount Hope marine shop for overhauling within a few days, its place at the breakwater being taken by No. 2; the former will be out of the shop within a month, after which it is expected that both barges will be kept busy. Their work will be supplemented by the use of a heavy locomotive crane, made from one of the steamshovels formerly in use in the Toro Point borrow pit. In the conversion of the steamshovel, the original boom was supplanted by one 65 feet in length specially constructed at Gorgona Shops. This crane will be used on a middle track, for placing heavy rock beyond the reach of the derrick barges, which work from the lee side of the trestle. All of the parts for the crane have been fabricated, and the assembling is being done at the Toro Point machine shop.

To the extent to which its position allows it, the breakwater has been proving a strong barrier against the heavy waves which roll in from the Caribbean. During heavy seas about the twentieth of November the seaward track shifted slightly at one point, but there has been no indication of real insecurity.

Sale of Surplus and Obsolete Supplies.

A catalogue of surplus material and obsolete equipment from the service of the Isthmian Canal Commission and the Panama Railroad, is being prepared at the Commission printing plant at Mount Hope. These goods are offered for sale. For the purposes of cataloguing, they are divided into twenty-eight classes, as follows:

1. Porto Bello rock crushing plant and spare parts.
2. Truck trailers and equipment.
3. Steam shovels and parts.
4. Locomotives, tank cars and flat cars, 42" gage.
5. Locomotives, steam, 5-foot gage.
6. Cranes.
7. Steam shovels and parts.
8. Unloaders, and parts.
9. Plows, ballast.
10. Rock channelers and parts.
11. Rock drills, rock drill parts and well drill parts.
12. Concrete mixer, trolley parts and on trolley trucks.
13. Boilers, engines and pumps.
14. Injectors, inspirators and parts.
15. Oil cups lubricators and lubricator parts.
16. Pop and safety valves and parts.
17. Shop tools, machinery and miscellaneous equipment.
18. Hand tools.
19. Rubber valves.
20. Electrical material.
21. Light and heavy hardware.
22. Concrete mixer, trolley parts and on trolley trucks.
23. Corral supplies.
24. Hotel and household supplies.
25. Steel, iron and tin lined cans.
26. Bridge parts.
27. Bar iron.
28. Hardware tools.

Intending bidders can obtain copies of circular advertising the above mentioned

(Continued.)

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.						Mixed by hand.	Large stone.	Total.
				1-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked	No. of mixers			
	<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>		
November 25.	1,920	37.83	8	106	8.00	1	258	22.50	3	45	2,329	
November 26.	1,370	23.50	8				196	19.00	3	45	1,611	
November 27.	1,602	34.50	8	44	4.00	1	260	27.00	4	35	1,941	
November 28.											(Holiday)	
November 29.	1,576	24.50	8	56	4.00	1	310	33.50	4	20	1,962	
November 30.	1,512	35.00	8	67	10.00	2	198	22.50	3		1,777	
Total.....	7,980	155.33	8	273	26.00	8	1,222	124.50	3.4	145	9,620	
Previously reported.....										3,693	1,323,032	
Grand total.....										3,693	1,332,652	

LEASING LANDS AT TERMINALS.

Areas Available to Private Parties, and Conditions for Granting Privileges.

The committee consisting of Col. H. F. Hodges, chairman, Mr. H. H. Rousseau, Mr. Frank Feuille, and Mr. J. A. Smith, appointed by the Chairman and Chief Engineer to consider the general subject of leasing lands in the vicinity of the Cristobal and Balboa terminals to private parties, for commercial, industrial, and residential purposes, has reported that, in general, any lands belonging to the United States, or to the Panama Railroad Company, which are not needed for governmental purposes, may be considered as subject to lease or license to private parties, in so far as legal power exists to make such leases or licenses. At present, the only authority for the leasing of public lands in the Canal Zone is that found in the Act of Congress, approved February 27, 1909, which empowers the President to lease lands to actual settlers for agricultural purposes. Town sites are expressly exempted from this authority.

The lands owned by the United States at the terminals of the Canal are not available for agricultural purposes, and, in most cases, are situated in town sites now in existence, or to be established. Consequently, no lease can be given for such lands on behalf of the United States. Although no leases can be made by the Isthmian Canal Commission for lands belonging to the United States at the terminals, licenses may be granted for the use of such lands. The license is nothing more than a revocable privilege, and creates no contractual relations between the licensee and the Government; and no claim for improvements can lawfully be set up against the Government by the licensee in the event of his having to vacate the lands.

The Panama Railroad Company is not debarred by law from leasing its lands, and may continue to do so, exercising the privilege of an individual or corporation to lease lands belonging to it.

Lands at Cristobal, belonging to the United States and the Panama Railroad Company, which are at present considered open for leasing are those not needed for public purposes, and include the area comprised between the Panama railroad and the west bank of the French canal, from Mount Hope to Mindi; an area to the west of the Panama railroad as it enters Colon, fronting on Folks River and Puerto Escondido, extending as far north as Mount Hope, a part of which is involved in litigation; beyond this area, one along the East Diversion, running indefinitely toward Gatun, also in litigation; any portion of the Panama Railroad Company's holdings on the west shore of Limon Bay, and south of an east and west line drawn through the mouth of the Sweetwater River, excepting a relatively small area involved in litigation, and extending to Kinney's Point; an area at the south end of Limon Bay, between the American and French canal channels, excepting the part within one-half mile of the west bank of the former; all of Manzanillo Island; and the island lying across the French canal from Cristobal, from opposite Mount Hope to its north end, opposite Dock 13.

On the Pacific side, the final arrangements of the town site, military camps, and other Governmental requirements at Balboa have not been determined. Pending such settlement, the committee recommends that no

areas having water frontage on the Canal bank be leased, inasmuch as to do so, even granting a moderate widening of the Canal, would be to risk obstructing the channel by vessels claiming right of way to and from certain private wharves. The site shortly to be created by reclaiming the swamp, bounded by Diablo Hill, the main line of the Panama railroad, Ancon Hill, and the permanent piers, will have no water frontage and may become available for leasing purposes. In case the water front of the Balboa dump is not needed for Governmental purposes, it would be well adapted to improvement by private enterprise, and licenses might be granted, with the provision that they shall not interfere with the use of the interior area of the dump for such Governmental purposes as might be desired. The condition near Balboa is complicated by the proposed acquisition of certain holdings in the vicinity.

The form of leases issued by the Panama Railroad Company, the committee recommends, may follow the present form, with such modifications as the special conditions of each case may require. No leases can be issued on the terminal areas belonging to the United States, because of the restriction to agricultural uses, but revocable licenses may be issued for lands available.

No iron clad form of license is recommended, because of the variety of conditions to be met. The committee recommends, however, that each licensee should embody a clause requiring the licensee to vacate the land on notice from the authorities, and to remove any improvements he may have placed thereon, at his own expense; and a clause to the effect that the license shall not be construed as excepting the licensee from the payment of lawful taxes that may be assessed against improvements placed by him upon the land.

In the Canal Zone, the water front, up to the high water mark, is owned by the United States, even when the abutting land is owned by private parties. There is no authority in any executive or administrative officer at present to lease any of the water areas at the terminals of the Canal. The granting of such authority must emanate from Congress.

All waterfronts available for lease are unimproved at present, and no Congressional authority exists for the expenditure of public moneys for the improvement of lands leased by the Government to private parties. Under existing conditions, it is doubtful whether a private enterprise would hazard the expense of making the improvements. The Panama Railroad Company is not debarred from making such improvements on its property, but the committee believes that undertaking them on a large scale is not at present advisable. An application for lease, with the making of improvements as a condition, might be accepted by the company, should it promise suitable return for the investment.

As to the manner of awarding licenses to bidders, it is noted that the Government lands cannot be leased, and if licenses are issued it would be impracticable to let them to the highest bidder, inasmuch as no contractual relation exists between the Government and the licensee. It recommends that leases of Panama railroad property should be granted, as in the past, to the highest bidder.

In conclusion, the committee believes that before any satisfactory plans can be made for encouraging private enterprise to improve or develop the terminals, Congress should enact

legislation giving authority to grant leases for public lands, other than those to be devoted to agricultural purposes, and outlining a policy as to making improvements with public funds as a condition for such leases, and as to the manner in which leases may be granted.

Conditions at Camp Otis.

The arrival of 102 recruits for the Tenth Infantry, U. S. A., at Las Cascadas, on November 15, from the United States, on the *Cristobal*, has filled the quarters at Camp Otis to full capacity. During the past year the barracks have been enlarged and altered in order to afford more room for the men, a post exchange has been built, and various small buildings have been acquired from the Isthmian Canal Commission to augment accommodations, but at all times the camp has been cramped. A quartermaster's storehouse is under construction near the regimental headquarters. This construction, as well as the laying of concrete walks, which is advanced continuously, is done by the men of the regiment, so that the only cost is for materials.

For formations, the regiment is also restricted. Each company has cleared for itself, from relatively level stretches of nearby jungle, a space about 125 yards square, for company formations, and drills in close order. No regimental or battalion formations are held, except muster and line of march along the highway, for practice marches. The regimental detachment has been formed from members of the companies and given separate quarters. The regiment will take up marches, and reconnoissance after the close of the school season on November 30. The dry season will be welcomed, as the mustiness of clothes and quarters prevalent during the rainy season has been increased by the crowded quarters. The health of the command has been very good since its arrival on the Isthmus. During the past year there were four desertions. Two of the men were apprehended.

A telephone system has been constructed at the camp, for the benefit of the garrison and those who desire to communicate with members of the regiment by telephone. Two trunk lines connect the local with the exchange at Empire, and all officers and men can now be reached by telephone.

Sanitation of Guayaquil.

Col. W. C. Gorgas, Maj. Robert E. Noble, Mr. Joseph A. LePrince, Dr. A. E. Mayner, and Mr. Joseph McGuigan leave today for Guayaquil, where they will make a preliminary estimate of the amount of work and money required to place that city in sanitary condition. The estimate is made at the request of the Government of Ecuador, with the object of having the port in sanitary condition by the time the Panama Canal is opened to commerce. Guayaquil has been for many years infected with yellow fever, and recently bubonic plague has also taken a foothold there. Its sanitation is regarded as highly important at this time, because it might become a menace to the whole world when the shipping of all nations comes into contact with vessels from Ecuador, upon the opening of the Canal.

FOUND—On Colon Beach, key ring containing four keys, two for Corbin lock, marked DF 9 and two for Eagle lock, one of which is marked LOCKE 3-R. Owner may recover same by applying at the Panama railroad Chief Dispatcher's office at Colon.

GATUN LAKE.

Transformation Made by One Rainy Season in Chagres Valley.

Gatun Lake has already a commercial value, although the surface of the water is still thirty feet below its final height. A man in Gatun has fitted out a large launch on which he conducts sightseeing parties for a round trip from Gatun to Gorgona each Sunday; the lighthouse service uses the lake in construction work; three gasoline launches at Gorgona, and twice as many canoes propelled by paddles or rigged with sails are making venturesome trips on the wind-swept surface; and natives from far back in the bush are bringing their products to market in cayucos that, instead of following the old river courses, are gliding over fields that were cultivated only a few months ago.

A series of freshets last week raised the surface of the lake to 56 feet above sea level, only 31 feet short of its final height; but the sluice gates in the Spillway are open now, and the surface is gradually falling to about 48 feet, where it will be held until the Spillway Dam is finished and the final filling of the lake begins next May. Even at the 48-foot level, however, the water has backed up in the Chagres valley and forms a large lake, much like one of those in the glacial regions of northern United States, with arms extending in every direction into the channels of old streams, and a score of islands breaking its surface.

Seen from the division office at Gatun, the lake stretches southward until it is lost in the mist that hangs over the hills. In the short intervals of sunlight that occur in a rainy season day in this part of the Isthmus, these hills, the water, and the sky seem only varying shades of blue, and they fuse into one another giving an effect of great distance. Yet this shore line is only a few miles away, and does not mark the end of the lake, but the point where the hills begin to close in toward the old river channel. One must leave the office building, and go to the edge of the hill, at the point where the railroad turns up the Gatun valley, to appreciate how large an arm of the lake this drowned river course forms. The water has backed up here, and in the Trinidad valley, until these streams would float a steamship for many miles inland; while every little creek that formerly poured into the Chagres has become a water highway through the woods.

One of these, the Frijoles River, is used by the men on lighthouse construction as a means of reaching a railroad station. The lighthouse builders are working on the west shore of the lake opposite the location of the old village of Tabernilla, and once a week they return to their home station. A two-mile pull across the open water, and then the canoes enter the channel of the river, and wind about between parallel rows of trees and bamboo clumps, the channel gradually becoming narrower, until there is just room for the working of the paddles. Last week four canoe loads of the men came up the river at sunset, when the myriad tints in the sky were reflected in the water, and the drops from the paddles glowed pink. Laughing and singing, they drove the canoes through the winding channel, and one who saw them coming up the tree-bordered lane might have thought them an incarnation of an old print

of the conquistadores on a voyage of discovery.

The lighthouse builders are making good use of the lake; for on it they tow sand and all other material to the very spots where the range lights are being erected. During the freshets of last week the little tow launch had difficulty in pushing its two barges up the Canal, so swift was the current in the channel. The first official trip on the lake was made by this branch of the service, when Col. H. F. Hodges accompanied the lighthouse engineer, Mr. W. F. Beyer, on a tour of inspection during the first week in October.

Strangers to the Canal work do not understand why the trees have not been cut in the area which the lake covers. It is simply a question of cost. The ship channel, from 1,000 to 500 feet broad, and the great anchorage basin at Gatun, have been cleared, and no further clearing is required for navigation. The lake will have an area of 164 square miles, and to clear this would require an expenditure of about \$2,000,000. A tree smothered when its roots are covered with water, and already the thousands of trees that have been flooded are beginning to die. Very little hardwood remains in the lake area, because this section of the country has been "lumbered over" several times since the 16th century. What with decay, insect attack, and wave motion, it is probable that within a decade the soft wood trees, that now stand so naked and ghostlike above the water, will have been uprooted and will have floated downstream.

Leaving the cleared channel, a light draft boat may even now float over the sites of the old lake region villages, which are marked by clumps of palms, orange, lemon, and mango trees, while here and there on some knoll one sees rows of the foundation piers of old buildings. It was to these that a recent article in an American magazine referred as the tombstones of "old French cemeteries."

At Tabernilla the tops of orange and lemon trees are sticking out of the water, so that a cayuco may be run through the branches, while its occupants pick the fruit. In the courses of the old streams, one may tie up to the limb of a tree and pick orchids. In fact, orchid hunting in the lake area is quite devoid of trouble; it would be possible to load a cayuco with the plants at many points along the Gatun and Trinidad rivers.

Along these rivers, too, many snakes are seen basking on the limbs of overhanging trees, or gliding daintily from limb to limb; while the lake itself seems rife with tiny fish an inch or two long. Running alongside the old Culebra Cut dump at Tabernilla, one gets an idea of how fast the vegetation grows in Panama, for where rock and earth were being dumped three or four years ago, bushes and trees are growing five or six feet high.

One effect of the rise of the water has been to shake the scepticism of the bush dwellers, who until recently could not be made to believe that it would be necessary for them to leave the area to be flooded by the lake. Following the channel of the Canal, and scanning the shores on either side, one sees only half a dozen huts between Gamboa and Gatun, and these are perched high up above the line of the final surface of the lake. The settlers were all reimbursed by the Government for their holdings, or improvements, many months ago and generally they have moved a mile or more back from the lake, where they have

built their huts, or into the townsites set aside for that purpose.

Altogether the impression one gets today from a trip on Gatun Lake is that in the near future it will be renowned as one of the most beautiful places on the beaten tracks of travel.

Rainfall from November 1 to 30, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon	1.57	4	6.38
Balboa	1.53	11	6.14
Maridores	4.70	11	11.89
Pedro Miguel	2.91	11	8.43
San Grande	1.31	11	7.01
<i>Central Section—</i>			
Culebra	1.78	23	7.30
Gamboa	1.05	24	7.06
Empire	1.35	23	7.24
Gatun	1.21	6	6.56
La Mina	2.02	8	12.75
Alhajuela	1.27	8	9.63
El Vena	2.15	28	10.79
Gorgona	1.74	7	7.15
Trinidad	3.73	2	20.36
Monte Lirio	1.52	3	16.35
<i>Atlantic Section—</i>			
Gatun	1.65	30	19.18
Brooks Brook	3.02	6	21.86
Colon	2.94	4	21.81
Porto Bello	3.81	11	25.37

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., November 29.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, November 30, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigia.	Alhajuela	Gamboa	Gatun Lake.
Sun., Nov. 24.....	132.2	97.0	55.8	55.1
Mon., Nov. 25.....	131.2	97.0	55.8	55.1
Tues., Nov. 26.....	135.6	99.0	55.7	55.1
Wed., Nov. 27.....	139.8	102.4	58.4	55.4
Thurs., Nov. 28.....	150.0	108.4	62.4	55.8
Fri., Nov. 29.....	141.8	103.3	59.6	56.3
Sat., Nov. 30.....	131.6	96.7	57.0	56.3
Height of low water to nearest foot.....	125.0	91.0	44.0	—

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending December 11, 1912 (75 meridian time):

DATE.	High	Low	High	Low
	A.M.	A.M.	P.M.	P.M.
December 5.....	12.25	6.48	1.07	7.12
December 6.....	1.23	7.43	2.03	8.06
December 7.....	2.15	8.33	2.54	8.55
December 8.....	3.03	9.29	3.38	9.42
December 9.....	3.47	10.05	4.21	10.27
December 10.....	4.28	10.47	5.00	11.08
December 11.....	5.08	11.28	5.40	11.50

Family Quarters.

Applications for family quarters on file on October 31, were as follows:

DISTRICT.	List No. 1.	List No. 2.
Ancon.....	6 (1)	90 (24)
Ancon Hospital.....		2
Balboa.....	1 (1)	52 (9)
Bas Obispo.....		27 (3)
Colon Hospital.....	2 (1)	
Corozal.....		63 (17)
Cristobal.....		132 (10)
Culebra.....		43 (10)
Empire.....		91 (12)
Gatun.....		91
Gorgona.....		65 (30)
Las Cascadas.....		33 (3)
Pedro Miguel.....	2 (1)	52 (12)
Porto Bello.....		3 (3)
Toro Point.....		7 (1)
Total.....	11 (4)	751 (134)

NOTE—The figures in parentheses show the number of applicants already occupying regular or nonhouse-keeping family quarters at stations other than those at which applications are filed.

BUSY TOURIST SEASON.

Unprecedented Traffic Indicated by Scheduled Regular and Special Sailings.

The scheduled sailings of steamers from the United States, and the accommodations booked on them to date, indicate that during the coming dry season the Isthmus will be visited by an unprecedented number of tourists. The regular services of the United Fruit Company, which has semi-weekly sailings from both New York and New Orleans, of the Hamburg-American Line, and the Panama Railroad Steamship Line, each with a weekly service between New York and the Isthmus, and of the Royal Mail Steam Packet Company, with fortnightly sailings between New York and Colon, will be continued, and in some cases augmented, while at least thirty special steamers will sail with parties of tourists for the Isthmus between January 1 and April 15, 1913. Some of these will be chartered vessels, carrying business or social organizations on excursions; the majority will be vessels operated by steamship lines, temporarily diverted to cruising the Caribbean.

The United Fruit Company will shortly place in service between New York and Colon three new steamers, each of approximately 8,000 tons register, which will be the largest of its fleet, and equipped with distinctive features for tropical cruising. Sailing from New Orleans on November 30, the *Saramacca* will be added to the service between that port and Colon. The company has arranged to date two chartered cruises, the first to arrive at Colon on February 12 from New York, under the direction of the Deffa Tours, while the second, sailing from New Orleans, will arrive at Colon on February 24, bearing a society of brewers from Cincinnati.

The Hamburg-American Line will send its *Moltke*, of 12,335 tons, on cruises leaving New York on January 4 and 23, February 25, and March 29, while the *Victoria Luise*, 16,500 tons, will sail from the same port on January 15, February 8, March 11, and April 10. The line will conduct two cruises from New Orleans on the *Kronprinzessin Cecilie*, 8,700 tons, sailing on January 23 and February 10.

The Royal Mail Steam Packet Company will conduct a special cruise, jointly from Southampton and New York, on the *Arcadian* and the *Oruba*. The former will sail from England to the West Indies, proceeding to New York without visiting the Isthmus, but tourists will be transferred at New York to the *Oruba*, which will sail from that port on December 21 for Colon, via Kingston. It will sail from Colon on January 7, for Southampton, making an extended tour along upper South America and

the Lesser Antilles before setting for the Canary Islands and Mediterranean ports.

The White Star Line, the Red Cross Line, the North German Lloyd, and the Peninsular and Occidental Steamship Company, which do not maintain regular services to Panama, will operate vessels as indicated in the appended schedule. The White Star Line which sent the *Laurentic*, 14,892 tons, on this cruise last season, will this year send the *Megantic*, 14,878 tons, in addition. The Red Cross liner *Stephano*, 3,500 tons, which made one Caribbean tour last season, will make two of the same sort during January and February. The North German Lloyd, which has never sent a passenger vessel to Colon, will institute a service through the Spanish Main with its *Grosser Kurfuerst*, 13,102 tons, making three cruises. The liner will sail from New York on January 16, February 20, and March 27. Wessels Brothers and von Gontard of Colon are the Isthmian agents for the North German Lloyd, while W. Andrews and Company of Colon are agents for the White Star Line, and the Red Cross Line and the Peninsular and Occidental Steamship Company are represented through the offices of the Panama Railroad Company.

The new bi-weekly service of the Peninsular and Occidental Steamship Company between Key West and Colon, was noted in THE CANAL RECORD of November 13, 1912. Key West is the nearest port in the United States to the Isthmus, the route to Colon being between 1,000 and 1,100 nautical miles in length. The *Evangeline*, 5,650 tons, will make the trip to Colon in about 70 hours and will carry mail.

Approximate arrivals of special steamers at Colon during the coming dry season, as scheduled to date, will be as follows:

Steamer.	Line.	Date.
<i>Oruba</i>	R. M.....	January 7
<i>Evangeline</i>	P. & O.....	January 10
<i>Moltke</i>	H. A.....	January 13
<i>Laurentic</i>	W. S.....	January 19
<i>Stephano</i>	R. C.....	January 20
<i>Evangeline</i>	P. & O.....	January 24
<i>Victoria Luise</i>	H. A.....	January 27
<i>Grosser Kurfuerst</i>	N. G. L.....	January 28
<i>Kronprinzessin Cecilie</i>	H. A.....	January 29
<i>Megantic</i>	W. S.....	February 2
<i>Moltke</i>	H. A.....	February 7
<i>Evangeline</i>	P. & O.....	February 7
<i>Stephano</i>	R. C.....	February 7
<i>Steamer</i>	U. F. C.....	February 12
<i>Kronprinzessin Cecilie</i>	H. A.....	February 16
<i>Laurentic</i>	W. S.....	February 20
<i>Evangeline</i>	P. & O.....	February 21
<i>Victoria Luise</i>	H. A.....	February 23
<i>Steamer</i>	U. F. C.....	February 24
<i>Grosser Kurfuerst</i>	N. G. L.....	March 4
<i>Megantic</i>	W. S.....	March 6
<i>Evangeline</i>	P. & O.....	March 7
<i>Moltke</i>	H. A.....	March 10
<i>Evangeline</i>	P. & O.....	March 21
<i>Laurentic</i>	W. S.....	March 23
<i>Grosser Kurfuerst</i>	N. G. L.....	April 4
<i>Evangeline</i>	P. & O.....	April 4
<i>Moltke</i>	H. A.....	April 13
<i>Victoria Luise</i>	H. A.....	April 18
<i>Evangeline</i>	P. & O.....	April 18

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to September 30, 1912, follows:

PERIODS.	Department of Civil Administration.	Department of Law.	Department of Sanitation.	Department of Construction and Engineering	General Items.	Fortifications.	Total.
Total to June 30, 1909.....	3,427,090.29		9,673,539.28	69,622,561.42	78,022,606.10		160,745,797.09
Total—Fiscal Year, 1910.....	709,351.37		1,043,441.95	26,300,167.05	2,863,088.83		31,675,648.20
Total—Fiscal Year, 1911.....	753,079.44		1,717,792.62	27,477,776.19	3,097,959.72		33,048,607.97
Total—Fiscal Year, 1912.....	820,398.57	1,448.53	123,803.64	2,649,246.61	200,970.55	1,212,881.66	35,396,665.14
July, 1912.....	63,913.12					104,126.92	3,143,509.37
August, 1912.....	62,182.51						2,739,834.02
September, 1912.....	59,201.01						2,670,946.20
Grand total.....	5,897,216.31	1,448.53	123,803.64	2,649,246.61	200,970.55	1,555,579.38	269,420,407.99

*Denotes credit.

Sale of Cargo of Steamship "Newport."

Sale of cargo recovered from the floated steamship *Newport* began at the "American wharf" in Panama on November 30. The goods offered for sale are in fair condition, and embrace a wide variety of objects, such as rope, wire, cloth, patent medicines, liquors, machetes, ironwork, condiments, lamps, and crockery; while a considerable amount of valuable cloth is yet to be brought by lighter from the vessel. The sale is being conducted by the firm of Koehler and Kemp, average-adjusters, of New York, attending to the interests of the Pacific Mail Steamship Company and the various underwriters. A large part of the cargo was bought in lump on December 2 by the Chicago House Wrecking Company, through its local representative, who is engaged in the recovery of French scrap under contract with the Isthmian Canal Commission.

The salvage steamer *Salvor*, which began work on the *Newport* on September 9, and succeeded in raising it on November 10, lay by a week for further assistance in righting the vessel and cleaning out the hold. The difficulty of salving the cargo, impregnated with water and slime, was enhanced by the presence of consignments of potassium cyanide, the fumes of which overcame a number of the laborers. The *Salvor* sailed from Balboa on November 19, for Esquimalt.

Obituary.

Mrs. Luvie Lohman, wife of Charles F. Lohman of Paraiso, died in Ancon Hospital on November 26. She was 36 years of age and had been on the Isthmus three years. She is survived by her husband living at Paraiso.

Sidney Earl Jones of the U. S. S. *Buffalo* died in Ancon Hospital on November 28. He was 24 years of age, single, and is survived by his mother, Mrs. Allen Howes, living in Forest City, Iowa.

Missing Men.

Any one having information regarding the whereabouts of Charles H. Fagan, who is supposed to be on the Isthmus of Panama, is requested to communicate with the American Consul General, Panama.

Any one having the present address of Ernest E. Harris, formerly employed as a foreman at Gatun, is requested to communicate with Frank Hanna, Rosedale, Kansas.

The immigration report of the Quarantine officer at the Port of Colon for November shows that 3,686 persons entered the port during the month, of whom 1,574 were cabin and 2,032 steerage passengers. Of the total 2,102 were men, 813 women, 359 children, and 412 unclassified. Among them were 107 United States troops. Practically all of the cabin passengers were tourists.

SOCIAL LIFE OF THE ZONE.

Church Notes.

The Rev. Aquila Lucas, field secretary of the International Sunday School Association, arrived in Colon on November 24, to work in the interest of the schools in the Isthmian Sunday School Association. He is spending two weeks on the Isthmus and will visit the Sunday schools in Cristobal, Gatun, Gorgona, Bas Obispo, Las Cascadas, Empire, Paraiso, and Pedro Miguel. This is his sixth annual visit to the American Sunday schools in the Canal Zone, the object being to keep the schools in touch with the progress of the movement throughout the world.

The Rt. Rev. Albion W. Knight, D. D., Bishop of Cuba, will arrive on the Isthmus from Havana, on January 8, on his annual visitation to the Panama mission of the Episcopal Church. Bishop Knight's first visit to the mission was in June, 1908.

The Christian Mission, a religious sect which originated in Barbados and established a branch on the Isthmus and in the Canal Zone in 1906, is erecting a church building in the new fill, east of E Street, Colon. It will be dedicated on Christmas Day. In connection with the church, there will be a mission house for the superintendent and his family, and a schoolroom. The cost of the buildings is estimated at \$2,000, which is being raised locally. The present headquarters of the mission are in a rented building on Bolivar Street, and consist of church and schoolroom combined, and rooms for the superintendent and his family. The Christian Mission has a membership in the Canal Zone of about 500. The American missionary connected with the sect, Miss Annie Coop, is on the Isthmus and is giving talks before the various missionary societies. On December 6, she will speak before the Gatun mission study class at the Baptist parsonage, and on December 20, she will be at Empire with the Ladies' Auxiliary.

Christmas Bazaars.

The Women's Guild of St. Mary's Church, Empire, will hold the Christmas bazaar in the Commission clubhouse on December 11.

A Christmas bazaar will be held by the members of Christ Church, Colon Beach, on December 14. Through the courtesy of the Governor of Colon, the girls' public school building will be used for the occasion. There will be four booths, representing the United States, the Republic of Panama, the West Indies, and Central America. The proceeds of this bazaar will be used for the renovation of the interior of the church building.

Christmas With the Lepers.

Christmas presents would be very much appreciated by the patients of the Palo Seco Leper Asylum. It is suggested that those who desire to help make the patients contented and happy on that day consult with the Chief Sanitary Officer or with the Superintendent of the Asylum.

Master Masons.

Services over the remains of Benjamin F. Wood will be held in Union Church, Cristobal, at 12.30 p. m., Sunday, December 8, 1912. All Master Masons are invited to attend. Sojourner's Lodge, U. D. A. F. and A. M., will meet at 12.00 o'clock noon instead of 1.00 p. m., as previously announced.

FREDERIC NEWTON, Secretary.

COMMISSION CLUBHOUSES

Activities of the Young Men's Christian Association.

GENERAL.

The schedule for moving pictures for the week of December 9 to 14, is as follows: Monday, Empire; Tuesday, Culebra; Wednesday, Corozal; Thursday, Gatun; Friday, Cristobal; Saturday, Gorgona.

The standing of the basketball league, December 2, was as follows:

	Won	Lost	P.C.
Empire.....	6	0	1000
Corozal.....	4	2	666
Gorgona.....	2	3	400
Gatun.....	2	4	333
Cristobal.....	0	5	000

The standing of the bowling tournament, December 2, was as follows:

	Won	Lost	P.C.
Empire.....	18	9	666
Gatun.....	17	10	629
Cristobal.....	16	11	593
Culebra.....	12	12	500
Corozal.....	9	18	333
Gorgona.....	6	18	250

COROZAL.

There was an attendance of 125 at the "Forum" held on Sunday evening, December 1. Music was furnished by the mixed quartet and an address was delivered by Mr. W. B. Childers of Gatun, who spoke on "Land, Labor and Capital."

On Saturday night, December 7, the Empire basketball team will play at Corozal. A large crowd is expected to see this game between the leaders in the league.

Gatun bowling team will bowl at Corozal on December 8.

The second course of Spanish lessons began on November 25, and a beginners' class was started on the same night. Classes meet Tuesday and Friday nights.

CULEBRA.

The first in the series of "The Forum" was held on Wednesday night, November 27. Music was furnished by the mixed quartet, and Prof. Frank A. Gause Superintendent of Schools, delivered an address on "Literature and Life." The next of the series will occur Friday night, December 13, in connection with an informal social to which all are invited. A musical program will be given and Mr. Childers of Gatun will give a short talk on "Labor and Capital." Light refreshments will be served.

In view of the fact that the bowling alleys are not available for use in the afternoon, Friday evenings, beginning at 8, have been set aside for the ladies and their partners.

The chess club is now playing at home and all devotees of the game are invited to make use of the tables provided for that purpose in the rear of the reading room.

The membership is increasing and it is requested that all those using the privileges will take out membership cards.

EMPIRE.

The invitation tennis bowling tournament held at Empire on Thanksgiving Day, in which teams from all the Commission clubhouses along the line participated, was one of the largest tournaments ever held on the Isthmus. There were 86 entries. The results were as follows:

	Singles.
Bullard, of Cristobal.....	213 237 197 —647
Hodges, of Gatun.....	192 268 185 —645
Huson, of Empire.....	180 191 212 —583

	Doubles.
Cristobal—Gibson.....	176 162 199
Barrett.....	192 162 188
Empire—Huson.....	167 221 153
Gustaveson.....	189 208 129
Cristobal—Collins.....	153 169 196
Bullard.....	208 147 155

High score for the day, 268, was made by Hodges, of Gatun.

The Empire bowling team won two out of three games from Corozal Saturday night, November 20; scores, Empire 958, 825, 895; Corozal 887, 825, 872. The second game of the three was won by Corozal on the roll-off.

The basketball game between Empire and Cristobal was won by Empire by the score of 36 to 12. Empire has won all the games played to date.

All men wishing to enter the December pool tournament should hand their names in before December 7.

On Thanksgiving evening, two teams played a masquerade game of basketball. The opposing forces were known as the Giants and the Barbarians, the former made up of Empire's regular basketball team and the latter dressed to represent Spaniards, Barbadians, Jamaicans and folks of other nations. A great deal of merriment occurred in the first half of the game; in the second half the players donned their regular playing costumes. The final score was: Giants, 36, Barbarians, 30.

GORGONA.

Thanksgiving Day was observed by "open house"

at the clubhouse. Motion pictures were shown in the afternoon and evening. Four hundred and twenty-five people attended the motion pictures shown in the evening.

A local bowling tournament opened Monday evening, December 2. Every man will be credited with the games won.

A \$2.50 cue will be given for the prize in the pool and billiard tournament this month.

One hundred and twenty-five people attended the opening number of "The Forum" Sunday evening, December 1, when Mr. Gause gave an address on "Literature and Life." On Sunday evening, December 8, Mr. Childers will deliver an address and the Tropical Male Quartet will furnish special music.

The Cristobal bowling team bowled at Gorgona Saturday evening; Gorgona lost all three games.

The Gatun basketball team played a practice game with Gorgona on Saturday evening, November 30, the regular game being cancelled because of absence of an official referee.

The Christmas Chorus is now practicing for the special entertainment. The regular chorus is now rehearsing the cantata, "The Seven Last Words of Christ."

GATUN.

An inauguration ceremony was held at the clubhouse on Saturday, November 30, when the Democratic candidates, who were successful at the recent political election, were inducted into office. Judge Sweek presided. The Mayor, W. B. Childers, made a brief speech. The Tenth Infantry Orchestra furnished the music.

Geo. F. Miller won a handsome fountain pen given as a prize for high single game on Thanksgiving Day.

The executive council met on Tuesday, November 26. W. C. Gayer presided.

The Educational Committee has decided to enlarge the scope of its work. In addition to the Spanish and shorthand classes, classes will be formed in any branch or study in which there are five members interested. A teacher now available offers the following branches: arithmetic, geometry, plane and solid, mathematics, algebra, English, English literature, physiology and hygiene, history, German, French, Latin. Violin and piano lessons can also be given.

The Culebra bowling team won three straight games from the local team on Saturday night, November 30.

CRISTOBAL.

On Wednesday night the orchestra from the *Prin Joachim* rendered a program of the late music. There was an attendance of 200.

Thursday, Thanksgiving Day, there was a large attendance at the building, and the pool and billiard tables as well as the bowling alleys were well patronized.

Friday night, "open house" was held for the second time during the past month. Free punch was served and a special musical program was rendered, as follows: Selection by mixed quartet, Mrs. Boyd, Mrs. Faure, Mr. Ross, Mr. Case; tenor solo, Mr. W. G. Ross; contralto solo, Mrs. Faure; bass solo, Mr. Case; selection by mixed quartet; tenor solo, Mr. E. L. Mosher.

There was an attendance of 160 at the moving picture show Saturday night.

There have been twelve men entered for a pool tournament, and six in a billiard tournament which will be started this week.

PORTO BELLO.

With a membership of twenty-one, the first aid class has averaged 14 in attendance each Tuesday night, under the leadership of J. L. Tolar. About January 1 the class will use the International Y. M. C. A. First Aid Examination papers for a test.

The discussion club will consider on Thursday night, December 5, "Lessons to be learned from the recent Presidential election." C. L. King was elected president of the club in place of C. C. McColley who was transferred to Culebra.

Marking the close of the pool tournament, Louis DePoorter of Gatun gave an exhibition in fancy pool shooting Saturday night, November 23. In the progressive pool match running for forty-five minutes and conducted by Mr. DePoorter, the following scores were made, Hill, 90; Reichert, 87; Thompson, 83; Bucklin, 79; Bent, 63; and Sherrard, 49. Mr. Hill also was first in the tournament and received a gold watch fob as prize; W. Jackson received a sterling silver watch fob for being second.

The membership contest has greatly increased the interest in the Sunday school. Mrs. C. K. Rogers is superintendent and Mrs. J. B. Van Voy, assistant superintendent.

A. C. Cornelison, who was for a number of years in charge of construction work at West Point, gave an illustrated address on West Point on Sunday night, December 1.

OFFICIAL CIRCULAR.

LABOR FORCE AND QUARTERS IN OCTOBER.

Rules for Computing the Service Required of Conductors and Engineers to be Eligible for Examination and Promotion.

CULEBRA, C. Z., November 27, 1912.

CIRCULAR No. 348-D:

The following rules will govern the method of computing the service required of conductors and engineers to be eligible for examination and promotion to the position of qualified conductor and engineer, to operate on the Panama railroad main line:

a. One month's service as conductor or engineer in qualified main line road service on any standard steam railroad operating under standard rules will count two and one-half points service.

b. One month's service as unqualified conductor or engineer with the I. C. C. or P. R. R. or one month's service as yard conductor or engineer on any standard railroad will count as two points service.

c. One month's service as fireman, brakeman or flagman on any standard railroad within the five years preceding employment on the Isthmus will count as one point service.

d. An applicant for promotion to the position of qualified conductor or engineer on the P. R. R. or I. C. C. must be of legal age, pass a physical examination and have had 50 points of service to his credit, as per either one or more of schedules A, B, or C above, and be familiar with the physical characteristics of the P. R. R. before being eligible for examination.

e. Any applicant who fails to pass a satisfactory examination will not be entitled to another trial within three months from the first examination, and, upon second failure, will be barred from any further examination. (This rule will be strictly observed.)

These rules supersede the rules previously adopted by the Panama Railroad Company and will not act retroactively to alter any decisions made under the old rules relative to seniority or examinations for qualified service. The length of service or unqualified engineers and conductors now on the seniority list will be recomputed under these rules, as of December 1, 1912, and suitable corrections will be made in the list.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Sale of Miscellaneous Property at Public Auction.

The storekeeper or the Medical Storehouse, Colon Hospital Grounds, Colon, will sell at his office, on Monday, December 16, 1912, at 1 p. m., to the highest bidder, for cash, a miscellaneous assortment of Isthmian Canal Commission property, some of which is second-hand, some new. This property consists mostly of furniture, clothing and household utensils and is subject to inspection by interested parties between the hours of 2 p. m. and 4 p. m., on all working days.

The Government reserves the right to accept or reject any or all bids.

For further information and a detailed list of the items to be offered for sale, apply by letter to the Medical Storekeeper, Cristobal, C. Z.

By direction of the Chief Sanitary Officer,
JOHN J. MORAN, Medical Storekeeper.

Sale of Public Buildings at Nombre de Dios.

OFFICE OF THE CHIEF QUARTERMASTER,
CULEBRA, C. Z., November 14, 1912.

Sealed proposals will be received at this office until 3 p. m., Saturday, December 14, 1912, and then opened, for the purchase of any or all buildings, including plumbing, owned by the Commission at Nombre de Dios. List of buildings and full information will be furnished upon application to any district quartermaster, or at this office. Proposals must be accompanied by five percentum (5%) of amount bid. The Government reserves the right to accept or reject any or all bids. Envelopes containing proposals should be endorsed "Proposal for purchase of buildings," and addressed to Col. C. A. DEVOL, Chief Quartermaster, Culebra, C. Z.

Sale of Surveying Instruments, Compasses, and Ship's Log.

OFFICE OF DEPOT QUARTERMASTER,
MOUNT HOPE, C. Z., November 19, 1912.

Sealed bids will be received at the office of the Depot Quartermaster, Mount Hope, C. Z., until 2 p. m., December 7, 1912, when they will be opened in the presence of attending bidders, for any or all surveying instruments, compasses, and ship's log now on hand in the storehouse for obsolete material. These instruments may be seen on any working day between the hours of 7 to 11 a. m., and 1 to 5 p. m., on application at this office. The right is reserved to reject any or all bids, or any combination of bids. Bids must be sealed and plainly marked: "Proposal to purchase surveying instruments," addressed to the Depot Quartermaster, Mount Hope, Canal Zone.
C. NIXON,
Depot Quartermaster.

On October 30, there were 39,382 employes actually at work on the Canal and the Panama railroad, and of that number 30,100 were Canal employes; 6,431 Panama railroad employes, and 2,851 employes principally of the emergency dam and gate contractors. The force, including the latter number, on October 30 was the largest recorded in the history of the work. The next largest was in March, 1910, when the report showed 38,676 men on the work. The gold force on the pay rolls of the Canal Commission, composed almost exclusively of white Americans, was 4,350. The force report of October 30, follows:

DEPARTMENT.	SILVER EMPLOYES.*													Total silver.	Total gold.	Grand total.
	Artisans.					European laborers.		West Indian laborers.								
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Const'n and Eng'ring.	4,301	10 11	244	862	3,465	3,746	694	120	359	5,293	2,345	1,244	21,694	3,311	25,005	
Civil Administration.	154		2	4	26						12		193	337	535	
Sanitation	664				3			1	1	4	320	3	1,002	352	1,354	
Quartermaster's.	840		95	170	120	35	2	30		188	681	12	2,173	187	2,360	
Subsistence	667		2		3								672	49	721	
Disbursements	7												7	23	30	
Examination of Accounts	4												4	91	95	
Total	6,637	10 11	346	1,039	3,617	3,781	696	151	360	5,485	3,358	1,259	25,750	4,350	30,100	
Month previous	6,470	10 12	357	1,018	3,455	3,738	594	147	376	5,397	3,562	1,269	25,405	4,166	29,571	

Panama railroad force, 5,258; Panama railroad commissary force, 1,173. Total, 6,431. I. C. C. force, 30,100. Grand total, 36,531.

*All wages specified are in gold. †Includes seven at 5 cents. ‡Includes nine at 5 cents.

The force report for the Department of Construction and Engineering on October 30, follows:

DIVISION.	SILVER EMPLOYES.*													Total silver	Total gold.	Grand total
	Artisans.					European laborers.		West Indian laborers.								
	Monthly	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Chief Engineer	308	..	53	218	647	42	33	..	..	931	156	12	2,407	543	2,950
Mechanical	268	5	2	30	63	487	41	1	..	949	70	10	1,926	840	2,766	
Atlantic	1,332	5	8	69	185	595	922	206	..	541	157	14	4,034	567	4,601	
Central	960	..	20	119	426	1,565	79	96	359	720	1,679	132	6,155	59	6,704	
Pacific	1,433	..	1	72	277	1,310	1,169	375	24	2,152	283	770	7,172	812	7,984	
Total	4,301	10 11	244	862	3,465	3,746	694	120	359	5,293	2,345	1,244	21,694	3,311	25,005	
Month previous	4,138	10 12	241	815	3,263	3,704	584	118	375	5,189	2,517	1,254	21,220	3,180	24,400	

*All wages specified are in gold. †Includes one at 5 cents. ‡Includes three at 5 cents.

In addition, there were on the Isthmus on October 30th, 348 gold, and 2,413 silver employes of the McClintic-Marshall Construction Company; 47 gold, and 21 silver employes of the United States Steel Products Company, and four gold, and 18 silver employes of the Chicago House Wrecking Company, a total of 399 gold, and 2,452 silver employes, not on the pay rolls of the Isthmian Canal Commission.

QUARTERS.

On October 31, there were 23,186 occupants of Commission quarters, as follows:

PLACE.	Gold.			Europeans.			West Indians.		
	Men	Women	Children	Men	Women	Children	Men	Women	Children
Balboa	230	34	37	341	..	..	393	..	..
Ancon	494	305	212	359	..	..	910	6	1
Corozal	511	89	90	333	..	..	403	5	5
Miraflores	19	2	1	579	3	11	176	6	3
Pedro Miguel	304	70	80	41	37	4	97	37	41
Paraiso	269	72	86	243	3	11	223	119	137
Culebra	332	173	170	428	45	81	363	131	174
Empire	512	307	282	442	57	70	458	135	190
Las Cascadas	170	95	88	72	17	28	280	152	120
Bas Obispo	65	41	39	101	21	32	139	66	72
Gorgona	816	249	292	76	8	21	286	107	181
Gatun	884	205	196	1,364	26	44	1,002	24	37
Cristobal	789	275	283	165	..	..	1,283	216	348
Toro Point	56	13	24	45	..	..	332	..	..
Porto Bello	69	27	21	109	..	..	223	2	2
Total	5,550	1,957	1,901	4,374	217	302	6,568	1,006	1,311

(1) Includes Sabanas police station, Taboga Island, Culebra Island, Palo Seco, and Naos Island. (2) Includes Europeans and Asiatics. (3) Includes 68 Panamanians. (4) Includes 37 East Indians. (5) Includes 70 Panamanians. (6) Includes Matachin. (7) Includes Colon Hospital. (8) Includes four Asiatics. Included in the above also, are 34 families, and 371 bachelors, belonging to the gold force of contractors.

Bids for Structural Steel.

OFFICE OF THE GENERAL PURCHASING OFFICER.

WASHINGTON, D. C., November 22, 1912.

For the information of bidders, the Isthmian Canal Commission wishes to advise that it will be in the market in the near future for approximately one thousand

tons of structural steel work for the shed on the Cristobal Docks. It is trusted that this advance notice will enable bidders to submit prompt bids for early delivery when the invitation for proposals is issued.

F. C. BOGGS,
Major, Corps of Engineers, U. S. A.,
General Purchasing Officer.

COMMISSARY DEPARTMENT.

The Commissary stores are open during the following hours:

Cuba, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Veracruz, 8 a. m. to 12.30 p. m., and 3 to 6 p. m.
Alcazar, 8 a. m. to 12.30 p. m., and 3 to 7 p. m.

Retail prices of all storage provisions for the week beginning December 2, 1912:

FRESH MEATS.	Price.
Mutton—Stewing, per pound.....	0
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire forequarter (not trimmed, 10 pounds and over), per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	0
Entire forequarter, neck trimmed off, per pound.....	9
Leg (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	16
Chops, per pound.....	24
Loin for roasting, per pound.....	24
Cutlets, per pound.....	28
Pork—Loin chops or roast, per pound.....	20
Beef—Suet, per pound.....	2
Soup, per pound.....	3
Stew, per pound.....	8
Plate, per pound.....	9
Corned, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Chuck roast (3 pounds and over), per pound.....	12
Pot roast, per pound.....	15
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds), per pound.....	18
Sirloin roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, chuck, per pound.....	12½
Round, per pound.....	13
Kidney, per pound.....	14
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse, not less than 1½ pounds, per pound.....	20
Tenderloin (Western), per pound.....	30
Venison (Imported), Stew, per pound.....	6
Forequarter (not under 6½ pounds), per pound.....	9
Rack (not under 5½ pounds), per pound.....	20
Saddle (not under 7½ lbs.), per pound.....	20
Leg (not under 9 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
MISCELLANEOUS.	
Pate de Foie Gras, jar.....	55
Livers—Beef, per pound.....	11
Half, each.....	30
Steak Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	11
Frankfurter, per pound.....	12
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	19
Sweetbreads—Beef, per pound.....	30
Eggs, fresh, dozen.....	139
one-half dozen only.....	120
Bluefish, per pound.....	15
Halibut, fresh, per pound.....	15
Salmon, fresh, per pound.....	22
Oysters, quarts, per keg.....	50
Shads, fresh, each.....	50
Roes, shad, pair.....	25
Poultry and Game.	
Chickens—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds each.....	1.25
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00
Fowls, each.....	1.60, 70, 80, 90.
Ducks, (Western, about 4½ pounds), each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	35
Capons, each.....	16
Ducks, blackhead, pair.....	60
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Phasians, per pair.....	1.30
CURED AND PICKLED MEATS.	
Ham—Cured, Western, per pound.....	20
Sugar cured, per pound.....	21
Sliced, per pound.....	22
Half, for boiling, per pound.....	22
Whole, per pound.....	28
Hocks, per pound.....	28
Beef, salt family, per pound.....	12

Bacon—Breakfast, whole piece, per pound.....	25
sliced, per pound.....	23
Pork, salt, family, per pound.....	14
OX Tongues, each.....	1.00
Pigs' feet, per pound.....	9
Tongues, each.....	10

Butter—Creamery, special, per pound.....	137
Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	45
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Parmesan, per pound.....	35
Edam, tin.....	26
Gouda, per pound.....	10
Milk (Certified), per bottle.....	**20
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	225
1 gallon.....	250

VEGETABLES AND FRUITS.	
Beets, per pound.....	*3
Celery, per head.....	5
Cabbage, per pound.....	*3
Cucumbers, per pound.....	8
Carrots, per pound.....	3
Lettuce, per pound.....	15
Onions, per pound.....	*10
Potatoes, white, per pound.....	*3
sweet, per pound.....	3
Peppers, green, per pound.....	17
Romaine, per pound.....	10
Squash, per pound.....	3
Turnips, per pound.....	3
Yams, per pound.....	3
Apples, per pound.....	4
Cranberries, per pound.....	10
Grapes, Spanish, per pound.....	12
Grapes, fruit, each.....	1
Lemons, dozen.....	24
Limes, per 100.....	80
Pears, per pound.....	8
Oranges, Jamaica, per dozen.....	12

*Indicates reduction from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advance on last list.
‡Fowls weigh each about, as follows; 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock next lightest weight is supplied and refund note sent for difference.
§Sold only from commissaries; no orders taken for delivery.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Colon, Cristobal and Balboa during the week ending November 30:

Sixtoia, November 24, from New York, with 60 kegs mule shoes, 50 kegs paint, 10 cases rubber hose, 14 cases bolts, for stock; 60 cases electrical material, for Superintendent of Erection.

Almirante, November 27, from New York, with 32 kegs mule shoes, 50 kegs paint, 10 cases rubber hose, 14 cases bolts, for stock; 60 cases electrical material, for Superintendent of Erection.

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MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Allianca.....	P. R. R. Tuesday.....	Dec. 3
Colon.....	P. R. R. Monday.....	Dec. 9
Advance.....	P. R. R. Saturday.....	Dec. 14
Panama.....	P. R. R. Friday.....	Dec. 20
Allianca.....	P. R. R. Friday.....	Dec. 27
Colon.....	P. R. R. Friday.....	Jan. 3
Advance.....	P. R. R. Thursday.....	Jan. 9
Panama.....	P. R. R. Wednesday.....	Jan. 15
Allianca.....	P. R. R. Tuesday.....	Jan. 21
Colon.....	P. R. R. Tuesday.....	Jan. 28
Advance.....	P. R. R. Monday.....	Feb. 3
Panama.....	P. R. R. Monday.....	Feb. 10
Allianca.....	P. R. R. Saturday.....	Feb. 15
Colon.....	P. R. R. Friday.....	Feb. 21
Advance.....	P. R. R. Friday.....	Feb. 28
Panama.....	P. R. R. Friday.....	Mar. 6
Allianca.....	P. R. R. Wednesday.....	Mar. 12
Colon.....	P. R. R. Tuesday.....	Mar. 18
Advance.....	P. R. R. Tuesday.....	Mar. 25
Panama.....	P. R. R. Monday.....	Mar. 31
Allianca.....	P. R. R. Saturday.....	Apr. 5
Colon.....	P. R. R. Saturday.....	Apr. 12
Advance.....	P. R. R. Saturday.....	Apr. 19
Panama.....	P. R. R. Friday.....	Apr. 26

CRISTOBAL TO NEW YORK.

Panama.....	P. R. R. Sunday.....	Dec. 8
Allianca.....	P. R. R. Sunday.....	Dec. 15
Colon.....	P. R. R. Saturday.....	Dec. 21
Advance.....	P. R. R. Thursday.....	Dec. 26
Panama.....	P. R. R. Thursday.....	Jan. 2
Allianca.....	P. R. R. Wednesday.....	Jan. 8
Colon.....	P. R. R. Wednesday.....	Jan. 15
Advance.....	P. R. R. Tuesday.....	Jan. 21
Panama.....	P. R. R. Tuesday.....	Jan. 28
Allianca.....	P. R. R. Sunday.....	Feb. 2
Colon.....	P. R. R. Sunday.....	Feb. 9
Advance.....	P. R. R. Saturday.....	Feb. 15
Panama.....	P. R. R. Saturday.....	Feb. 22
Allianca.....	P. R. R. Friday.....	Feb. 28
Colon.....	P. R. R. Saturday.....	Mar. 8
Advance.....	P. R. R. Wednesday.....	Mar. 12
Panama.....	P. R. R. Tuesday.....	Mar. 18
Allianca.....	P. R. R. Monday.....	Mar. 24
Colon.....	P. R. R. Sunday.....	Mar. 30
Advance.....	P. R. R. Monday.....	Apr. 7
Panama.....	P. R. R. Saturday.....	Apr. 12
Allianca.....	P. R. R. Friday.....	Apr. 18
Colon.....	P. R. R. Thursday.....	Apr. 24

NEW YORK TO COLON.

Prinz August Wilhelm H.-A.....	Saturday.....	Nov. 30
Turrialba.....	U. F. C. Saturday.....	Nov. 30
Prinz Sigismund.....	H.-A. Saturday.....	Dec. 7
Magdalena.....	R. M. Saturday.....	Dec. 7
Prinz Joachim.....	H.-A. Saturday.....	Dec. 14
Oruba.....	R. M. Saturday.....	Dec. 21
Prinz Eitel Friedrich.....	H.-A. Saturday.....	Dec. 21
Prinz August Wilhelm H.-A.....	Saturday.....	Dec. 28
Prinz Sigismund.....	H.-A. Saturday.....	Jan. 4
Prinz Joachim.....	H.-A. Saturday.....	Jan. 11

COLON TO NEW YORK.

Almirante.....	U. F. C. Thursday.....	Dec. 5
Prinz Eitel Friedrich.....	H.-A. Monday.....	Dec. 9
Tagus.....	R. M. Tuesday.....	Dec. 10
Carrillo.....	U. F. C. Tuesday.....	Dec. 10
Santa Marta.....	U. F. C. Thursday.....	Dec. 12
Prinz August Wilhelm H.-A.....	Monday.....	Dec. 16
Turrialba.....	U. F. C. Tuesday.....	Dec. 17
Prinz Sigismund.....	H.-A. Monday.....	Dec. 23
Arcadian.....	R. M. Tuesday.....	Dec. 24
Prinz Joachim.....	H.-A. Monday.....	Dec. 30
Prinz Eitel Friedrich.....	H.-A. Monday.....	Jan. 6
Prinz August Wilhelm H.-A.....	Monday.....	Jan. 13

NEW ORLEANS TO COLON.

Abangarez.....	U. F. C. Saturday.....	Nov. 30
Heredia.....	U. F. C. Wednesday.....	Dec. 4
Cartago.....	U. F. C. Saturday.....	Dec. 7
Parismina.....	U. F. C. Wednesday.....	Dec. 11
Saramacca.....	U. F. C. Saturday.....	Dec. 14
Abangarez.....	U. F. C. Wednesday.....	Dec. 18
Heredia.....	U. F. C. Saturday.....	Dec. 21
Atenas.....	U. F. C. Wednesday.....	Dec. 25
Parismina.....	U. F. C. Saturday.....	Dec. 28

COLON TO NEW ORLEANS.

Parismina.....	U. F. C. Thursday.....	Dec. 5
Saramacca.....	U. F. C. Thursday.....	Dec. 5
Abangarez.....	U. F. C. Thursday.....	Dec. 12
Atenas.....	U. F. C. Thursday.....	Dec. 19
Parismina.....	U. F. C. Thursday.....	Dec. 19
Saramacca.....	U. F. C. Thursday.....	Dec. 26
Abangarez.....	U. F. C. Thursday.....	Dec. 26
Heredia.....	U. F. C. Thursday.....	Jan. 2

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, DECEMBER 11, 1912.

No. 16.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Largest Working Force.

Forty thousand one hundred and fifty nine persons were at work on the Canal and railroad at the close of November, the largest force in the Canal history. Of the total all excepting a few hundred women and children were men, and 5,816 were white Americans. This condition is due mainly to the employment of 3,499 men by the contractors on lock gates and similar work, and the development of the lock machinery erection under the Assistant Chief Engineer.

A comparison with the greatest force of past years follows:

Year.	Month.	Force.
1907	October	31,967
1908	April	33,170
1909	October	35,405
1910	March	38,676
1911	December	37,826
1912	November	40,159

Canal Work in November.

The grand total of Canal excavation to December 1 was 185,464,496 cubic yards, leaving to be excavated 27,039,642 cubic yards, or a little more than one-seventh of the entire amount necessary for the completed Canal. The total excavation for the month of November was 2,511,026 cubic yards, as compared with 2,599,922 cubic yards in November 1911; with 3,006,037 cubic yards in November 1910, and 2,458,152 cubic yards in November 1909.

The dry excavation amounted to 1,282,029 cubic yards, and was entirely by steamshovels. The dredges and monitors removed 1,228,997 cubic yards. The progress in the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 680,450 cubic yards. Of this total, 2,203 cubic yards consisted of dry excavation at Gatun Locks, and the remainder was wet excavation—670,247 cubic yards from the Atlantic entrance, and 8,000 cubic yards dredged at Gatun Locks.

The total excavation in the Central Division was 976,071 cubic yards, which includes 3,000 cubic yards in the Culebra Cut section charged to "plant" excavation. The

output for November in the Central Division showed a decrease from October of 143,776 cubic yards.

In the Pacific Division, the total excavation was 854,505 cubic yards, 237,578 cubic yards of which consisted of dry excavation in the prism between Pedro Miguel and Miraflores locks, and south of Miraflores Locks; 36,041 cubic yards on account of the Balboa terminals, and the remainder from the locks and spillway sites. Of the 550,750 cubic yards of wet excavation, 536,941 cubic yards were from the channel, and 13,809 cubic yards were taken out at the Balboa terminals.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
	Cu. Yds.	Cu. Yds.	Cu. Yds.
<i>Dry excavation—</i>			
Locks, dam and spillway	2,203		2,203
Mindi			
Terminal	2,203		2,203
Total	2,203		2,203
<i>Wet excavation—</i>			
Atlantic entrance	670,247		670,247
Locks, dam and spillway	8,000		8,000
Terminal			
Total	678,247		678,247
Total wet and dry excavation	680,450		680,450

CENTRAL DIVISION.

<i>Dry excavation—</i>			
Culebra Cut	945,319	3,000	948,319
Chagres section			
Ooispo Diversion	27,752		27,752
Total	973,071	3,000	976,071

PACIFIC DIVISION.

<i>Dry excavation—</i>			
Locks, dams and spillways	30,136		30,136
Prism, south of Miraflores Locks	237,578		237,578
Balboa terminals	36,041		36,041
Total	303,755		303,755
<i>Wet excavation—</i>			
Pacific entrance	534,273	2,668	536,941
Miraflores Locks and Dam			
Balboa terminals	13,809		13,809
Total	548,082	2,668	550,750
Total wet and dry excavation	851,837	2,668	854,505

TOTAL CANAL EXCAVATION.

Dry excavation	1,279,029	3,000	1,282,029
Wet excavation	1,226,329	2,668	1,228,997
Total	2,505,358	5,668	2,511,026

MATERIAL	Atlantic	Pacific	Total
	Cu. Yds.	Cu. Yds.	Cu. Yds.
Concrete laid in locks	6,377	47,846	54,223
Concrete laid in dams and spillways	855		855
Fill placed in dams	184,485	64,145	248,630

Mean rainfall along Canal (ten stations) 10.70 inches.
By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as a prism, diversions, or locks, etc., that is, it represents material taken from the area to be occupied

by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

Trans-Isthmian Electric Transmission Line.

Survey began last week for the location of towers to carry the electrical transmission line which will follow the relocated line of the Panama railroad from Cristobal to Balboa, connecting terminal sub-stations at those points. The line will be fed normally from the Gatun hydroelectric station, and will be tied into the permanent steam generating station at Miraflores. Energy will be transmitted along this line at a potential of 44,000 volts, in delta connection, and reduced at centers of distribution to the requisite potentials for the operation of machinery and for lighting.

Each tower is to be a track-span bridge, consisting of two side frames connected by a cross-bridge, all of skeleton steel construction. The bridge is to support duplicate three-phase lines, one on either side of the track, a ground wire strung from the top of each side-frame, messengers and cables for duplicate telephone trunks and for track signal circuits, and the necessary messengers and wires for a catenary trolley construction should the Panama railroad be electrified. The track-span bridges will be located from 200 to 300 feet apart, according to the curvature of the tracks. Under the specifications being prepared, preliminary to advertising for bids on furnishing materials for the line, 725 single-track and 100 double-track bridges will be required, with 2,000,000 feet of copper wire, No. 00, B. & S. gage, 6,500 three-unit suspension insulators, and 1,000 ground-plates. Inasmuch as the Commission has secured poor deliveries upon recent requirements of structural steel fabrications, in connection with unfavorable prices on both steel and copper in the United States market, foreign manufacturers will be invited to compete for furnishing materials for the transmission line.

Spillway Sluice Gates.

The waste weir of any mill dam represents the same method of controlling the water level of the pond as the great spillway of Gatun Dam will employ relative to Gatun Lake. The difference is chiefly that of size. In the ordinary mill pond one gate of a few square feet suffices; in Gatun Spillway there will be 14 gates, each closing a weir 45 feet long. The gates are 19 feet high, and weigh 43 tons.

These gates have been put together at Gatun and it is expected that the first of them will be installed this week, while the others will follow according as the spillway builders are ready for them. The gates will be hauled

STEAMSHOVEL RECORDS.

Work in Central Division in November.

During the month of November the total amount of material excavated in the Central Division was 976,071 cubic yards, of which 174,249 cubic yards were classified as earth, and 801,822 cubic yards as rock.

Of the total, 973,071 cubic yards were primary excavation in Canal prism, and 3,000 cubic yards were classified as plant excavation. The total of 976,071 cubic yards was removed by steamshovels.

The high record for the month was made by shovel No. 209, working 23½ days in the Empire district, which excavated 43,393 cubic yards of rock.

The second best record for the month was made by shovel No. 222, working 23 days in the Culebra district, which excavated 17,236 cubic yards of earth and 25,854 cubic yards of rock, a total of 43,090 cubic yards.

The best record for a shovel of the seventy-ton class was made by shovel No. 101, working 22 days in the Empire district, which excavated 27,752 cubic yards of earth.

Shovel No. 215, working in the Empire district, made a high record for one day by excavating 2,932 cubic yards of rock on November 27.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best records for the month and for one day are shown in the following table:

BEST RECORDS FOR THE MONTH.
CULEBRA DISTRICT.

SHOVEL No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
222.....	17,236	25,854	43,090	23
212.....	16,118	24,176	40,294	23½
208.....	33,111	33,111	66,222	23

EMPIRE DISTRICT.

209.....	43,393	43,393	86,786	23½
215.....	37,362	37,362	74,724	23½
262.....	37,584	37,584	75,168	23½

BEST RECORDS FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
215	Empire.....	Nov 27	Rock.....	2,932
215	Empire.....	Nov. 29	Rock.....	2,794
262	Empire.....	Nov. 27	Rock.....	2,746
230	Culebra.....	Nov. 13	Rock.....	2,869
204	Culebra.....	Nov. 1	Rock.....	2,657
222	Culebra.....	Nov. 19	Rock.....	2,565
212	Culebra.....	Nov. 16	Rock.....	2,527

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the two weeks ending December 7:

DATE.	Hours worked.	Cubic yards.
November 24.....	4.00	325
November 25.....	6.15	2,273
November 26.....	8.05	1,978
November 27.....	8.30	2,574
November 28 (holiday).....		
November 29.....	8.30	2,498
November 30.....	7.30	2,612
Total.....	42.50	12,260
December 2.....	7.20	2,645
December 3.....	7.50	2,702
December 4.....	8.15	2,763
December 5.....	8.15	2,264
December 6.....	6.55	2,741
December 7.....	6.50	1,917
Total.....	45.25	15,112

Lost—U. S. flag, 13 stars, taken from the Empire fire station. Finder will please return to O. R. Lampson, Empire, and receive reward.

LABOR FORCE AND QUARTERS IN NOVEMBER.

The largest labor force of record for the Canal and railroad is that reported on November 27, a total of 40,159. Of these 36,660 employees were actually at work on the Canal and the Panama railroad and of that number 30,594 were Canal employees. The gold force on the Canal work, composed almost exclusively of white Americans, was 4,475. The total Government force was as follows: Panama railroad force, 4,886; Panama railroad commissary force, 1,180. Total P. R. R., 6,066. I. C. C. force, 30,594; Grand total, 36,660. The remaining 3,499 were employed by contractors on Canal work. The statement for November 27 follows:

DEPARTMENT	SILVER EMPLOYEES.*													Total silver.	Total gold.	Grand total.
	Artisans.					European laborers.		West Indian laborers.								
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Const'ct'n and Eng'ring.	4,321	910	255	917	3,460	3,497	942	111	369	5,613	2,301	250	32,057	3,432	25,489	
Civil Administration.....	153		2	4	24								190	334	524	
Sanitation.....	664		3	3	3				1	8	323	2	1,008	349	1,357	
Quartermaster's.....	866		136	176	17	34	2	29		146	704	6	2,122	188	2,310	
Subsistence.....	726		2		3								731	51	782	
Disbursements.....	7												7	24	31	
Examinat'n of Accounts	4												4	97	101	
Total	6,741	910	398	1,100	3,507	3,531	944	141	370	5,767	3,335	258	26,119	4,475	30,594	
Month previous.....	6,680	1012	354	1,059	3,615	3,777	683	152	360	5,431	3,301	259	25,701	4,322	30,023	

*All wages specified are in gold. †Includes seven at 5 cents. ‡Includes nine at 5 cents.

The force report for the Department of Construction and Engineering on November 27, follows:

DIVISION.	SILVER EMPLOYES.*											Total silver.	Total gold.	Grand total.		
	Artisans.					European laborers.		West Indian laborers.								
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.				10 cents.	7 cents.
Chief Engineer.....	316	...	...	59	247	772	45	33	...	...	1,043	187	12	2,714	619	3,333
Mechanical.....	248	4	2	29	65	449	39	1	...	...	998	65	10	1,910	862	2,772
Atlantic.....	1,366	5	7	76	200	484	818	385	...	...	656	138	18	4,153	569	4,722
Central.....	981	...	...	20	129	420	1,472	99	89	269	806	1,631	137	6,153	566	6,719
Pacific.....	1,410	...	...	1	71	276	1,335	1,123	424	22	2,110	280	775	7,127	816	7,943
Total.....	4,321	9	10	255	917	3,460	3,497	942	111	369	5,613	2,301	252	22,057	3,432	25,489
Month previous.....	4,339	10	12	243	872	3,433	3,742	681	121	359	5,233	2,303	252	21,600	3,281	24,881

*All wages specified are in gold. †Includes two at 5 cents. ‡Includes three at 5 cents.

In addition, there were on the Isthmus on November 27th, 390 gold, and 2,970 silver employees of the McClintic-Marshall Construction Company; 59 gold, and 43 silver employees of the United Steel Products Company, and five gold, and 32 silver employees of the Chicago House Wrecking Company, a total of 454 gold, and 3,045 silver employees, not on the pay rolls of the Isthmian Canal Commission.

Passenger Elevator at Tivoli Hotel.

After the inspection and test of the elevator recently installed in the Tivoli Hotel, the testing engineer recommended that the feeder pressure be increased from 208 to 220 volts, by means of extra taps on the transformers; the conduit blocking the slack cable switch be moved and fastened securely in place; the cable operating the safety speed-limit device be tightened to remove considerable slack; the main cut-out switch be enclosed in an asbestos-lined box; the incandescent lamp in the car be moved up so as to place it in the proper position inside circular diffusing globe.

These changes were made, and the elevator has been put in satisfactory operation. It is of the Otis make, with a car five feet three inches by six feet nine inches in plan, with a capacity of 1,800 pounds, actuated by a 220 volt, 25 cycle, 7.5 horsepower alternating current motor. The car travels between the first and the third floor at the rate of 115 feet per minute.

Lands Available for Lease.

In the article "Leasing Lands at the Terminals," published in THE CANAL RECORD of December 4, the following statement was in error: "all of Manzanillo Island; and the island lying across the French canal from

Cristobal, from opposite Mount Hope to its north end, opposite Dock 13" are available for lease.

The committee did not report these lands as available. Manzanillo Island is owned almost entirely by the Panama Railroad Company, and only parts of it are available for lease; while the island opposite Mount Hope is in the lands reserved for Canal purposes.

Thirty vessels were inspected, eight fumigated, and 3,507 persons, of whom 510 were passengers, were examined by the Quarantine officers at the port of Ancon during the month of November.

PERSONAL.

Mr. Edward Schildhauer, accompanied by Mrs. Schildhauer, sailed for the United States on the Panama on December 8.

Maj. Smedley D. Butler, U. S. M. C., sailed on the Advance for the United States on December 3.

Dr. Wm. H. Bell, Surgeon, U. S. N., Superintendent of Colon Hospital from March 7, 1910, to December 3, 1912, sailed for the United States on December 3, accompanied by Mrs. Bell, to report for duty elsewhere.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

CONCRETE IN LOCKS AND DAMS.											
MONTHS.				GATUN LOCKS. [†]				PEDRO MIGUEL LOCKS. [†]			
1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1909.	1910.	1911.	1912.
Jan.	79,651	106,790	566,750	1,150,249	1,323,803	1,356,336	1,416,085	169,447	369,309	275,832	28,357
Feb.	75,740	165,110	630,112	1,248,265	1,194,454	1,406,338	1,349,569	200,145	450,182	289,319	66,145
Mar.	128,719	215,178	1,000,888	1,434,567	1,509,725	1,726,745	1,539,618	324,233	619,491	484,846	172,607
Apr.	128,719	215,178	1,000,888	1,434,567	1,509,725	1,726,745	1,539,618	324,233	619,491	484,846	172,607
May.	58,915	114,369	590,465	1,060,840	1,127,913	1,405,716	1,455,216	329,483	575,902	427,777	102,105
June.	76,908	214,623	674,886	1,134,032	1,242,114	1,299,100	1,405,716	329,483	575,902	427,777	102,105
July.	76,908	214,623	674,886	1,134,032	1,242,114	1,299,100	1,405,716	329,483	575,902	427,777	102,105
Aug.	49,711	159,780	770,570	1,121,325	1,200,811	1,337,833	1,338,750	365,757	643,389	466,106	77,616
Sept.	49,711	159,780	770,570	1,121,325	1,200,811	1,337,833	1,338,750	365,757	643,389	466,106	77,616
Oct.	49,711	159,780	770,570	1,121,325	1,200,811	1,337,833	1,338,750	365,757	643,389	466,106	77,616
Nov.	52,530	37,009	334,149	1,160,101	1,306,314	1,306,314	1,113,420	46,948	235,819	274,290	12,217
Dec.	60,530	30,742	290,433	1,022,576	1,209,554	1,109,498	973,071	336,390	505,044	197,481	10,809
Totals	914,254	2,702,991	9,177,130	13,912,453	14,557,034	15,358,599	16,596,801	17,953,903	3,752,492	3,153,669	460,564

Spillway, Gatun Dam, March 1, 1912, 471 cubic yards.
Miraflores Dam, to December 1, 1912, 471 cubic yards.
Pedro Miguel Dam, 593 cubic yards to December 1, 1912.
1116.072 cu. yds. in 1909. ††33,856 cu. yds. in 1909. †102 cu. yds. in 1909.

FILL PLACED IN DAMS.

FILL PLACED IN DAMS.											
MONTHS.				GATUN.*				MIGUEL.†			
1911.	1912.	1911.	1912.	1911.	1912.	1911.	1912.	1911.	1912.	1911.	1912.
Jan.	211,691	218,691	173,900	239,268	18,044	89,243	24,685	24,920	24,920	24,920	24,920
Feb.	301,733	211,008	211,399	145,721	45,153	87,335	32,404	24,920	24,920	24,920	24,920
Mar.	342,809	205,130	204,184	286,956	66,285	25,131	32,404	24,920	24,920	24,920	24,920
Apr.	419,648	207,751	194,733	227,011	1,178	18,353	30,012	31,270	31,270	31,270	31,270
May.	432,008	227,996	160,688	193,110	15,404	35,858	38,415	37,400	37,400	37,400	37,400
June.	324,947	201,996	108,463	207,405	14,865	16,150	24,957	45,140	45,140	45,140	45,140
July.	259,389	192,426	43,589	201,029	24,812	1,481	25,000	72,203	72,203	72,203	72,203
Aug.	261,838	194,497	62,666	184,000	4,521	3,615	6,409	34,480	34,480	34,480	34,480
Sept.	214,320	218,405	157	288,939	3,400	16,771	31,800	57,465	57,465	57,465	57,465
Oct.	266,603	207,157	157	184,485	7,350	14,370	31,800	46,115	46,115	46,115	46,115
Nov.	89,752	233,063									
Dec.											
Totals	3,493,388	2,613,066	1,402,501	2,356,817	57,669	340,443	366,336	460,514	460,514	460,514	460,514

*Wet fill to Jan. 1, 1911. 5,833,076 cu. yds. Dry fill to Jan. 1, 1911. 6,128,105 cu. yds.
†Wet fill to Jan. 1, 1911. 260,852 cu. yds. Dry fill to Jan. 1, 1911. 294,712 cu. yds.

CANAL EXCAVATION TO DATE.

By French Companies.
French excavation useful to present Canal.
By Americans—
Dredges.
Total.
May 4 to December 31, 1904.
January 1 to December 31, 1905.
January 1 to December 31, 1906.
January 1 to December 31, 1907.
January 1 to December 31, 1908.
January 1 to December 31, 1909.
January 1 to December 31, 1910.
January 1 to December 31, 1911.
January 1 to November 30, 1912.

CANAL EXCAVATION TO DATE.											
DIVISIONS				AMOUNT EXCAVATED				REMAINING TO BE EXCAVATED.			
Atlantic—	Dry excavation.	Dredges.	Total.	Atlantic—	Dry excavation.	Dredges.	Total.	Atlantic—	Dry excavation.	Dredges.	Total.
May 4 to Dec. 31, 1904.	1,799,227		1,799,227	Atlantic—	8,656,320		8,656,320	Atlantic—	2,277,797		2,277,797
Jan. 1 to Dec. 31, 1905.	1,799,227		1,799,227	Dry excavation.	33,201,907		33,201,907	Dry excavation.	6,425,929		6,425,929
Jan. 1 to Dec. 31, 1906.	1,799,227		1,799,227	Dredges.	87,456,727		87,456,727	Dredges.	150,000		150,000
Jan. 1 to Dec. 31, 1907.	1,799,227		1,799,227	All other points.	12,384,655		12,384,655	All other points.	6,575,929		6,575,929
Jan. 1 to Dec. 31, 1908.	1,799,227		1,799,227	Culebra Cut.	6,634,494		6,634,494	Culebra Cut.	3,676,245		3,676,245
Jan. 1 to Dec. 31, 1909.	1,799,227		1,799,227	Pacific—	37,100,393		37,100,393	Pacific—	10,753,918		10,753,918
Jan. 1 to Dec. 31, 1910.	1,799,227		1,799,227	Dredges.				Dredges.	14,430,163		14,430,163
Jan. 1 to Dec. 31, 1911.	1,799,227		1,799,227	Total.				Total.	27,039,642		27,039,642
Jan. 1 to Nov. 30, 1912.	1,799,227		1,799,227	Grand total.				Grand total.			
				*Estimate exceeded by this amount.				*Estimate exceeded by this amount.			

DRY EXCAVATION.

CENTRAL DIVISION.

CENTRAL DIVISION.											
MONTHS.				CULEBRA SECTION.*				CHAGRES SECTION.**			
1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1909.	1910.	1911.	1912.
Jan.	79,651	106,790	566,750	1,150,249	1,323,803	1,356,336	1,416,085	169,447	369,309	275,832	28,357
Feb.	75,740	165,110	630,112	1,248,265	1,194,454	1,406,338	1,349,569	200,145	450,182	289,319	66,145
Mar.	128,719	215,178	1,000,888	1,434,567	1,509,725	1,726,745	1,539,618	324,233	619,491	484,846	172,607
Apr.	128,719	215,178	1,000,888	1,434,567	1,509,725	1,726,745	1,539,618	324,233	619,491	484,846	172,607
May.	58,915	114,369	590,465	1,060,840	1,127,913	1,405,716	1,455,216	329,483	575,902	427,777	102,105
June.	76,908	214,623	674,886	1,134,032	1,242,114	1,299,100	1,405,716	329,483	575,902	427,777	102,105
July.	76,908	214,623	674,886	1,134,032	1,242,114	1,299,100	1,405,716	329,483	575,902	427,777	102,105
Aug.	49,711	159,780	770,570	1,121,325	1,200,811	1,337,833	1,338,750	365,757	643,389	466,106	77,616
Sept.	49,711	159,780	770,570	1,121,325	1,200,811	1,337,833	1,338,750	365,757	643,389	466,106	77,616
Oct.	49,711	159,780	770,570	1,121,325	1,200,811	1,337,833	1,338,750	365,757	643,389	466,106	77,616
Nov.	52,530	37,009	334,149	1,160,101	1,306,314	1,306,314	1,113,420	46,948	235,819	274,290	12,217
Dec.	60,530	30,742	290,433	1,022,576	1,209,554	1,109,498	973,071	336,390	505,044	197,481	10,809
Totals	914,254	2,702,991	9,177,130	13,912,453	14,557,034	15,358,599	16,596,801	17,953,903	3,752,492	3,153,669	460,564

PACIFIC DIVISION.†

PACIFIC DIVISION.†											
MONTHS.				MIRAFLORES LOCKS, DAMS AND SPILLWAY.††				BALBOA T.M.S.S.			
1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1905.	1906.	1907.	1908.
Jan.	292,155	102,650	125,011	65,889	1,330	1,330	24,969	7,203	31,479	48,744	95,609
Feb.	282,797	95,031	123,738	50,511	1,228	1,228	24,969	39,046	15,300	12,936	47,426
Mar.	374,598	90,051	132,007	51,431	254	254	1,777	73,194	18,184	72,739	29,352
Apr.	374,598	90,051	132,007	51,431	254	254	1,777	98,943	60,060	12,148	79,751
May.	266,747	52,786	92,958	12,548	17,677	24,250	13,269	73,023	47,588	20,250	57,975
June.	244,951	36,556	98,988	8,808	19,605	24,250	13,269	68,651	55,653	21,994	38,023
July.	213,359	31,058	98,303	6,897	1,974	22,558	1,075	102,369	50,999	11,990	97,884
Aug.	158,262	40,446	99,737	22,558	1,075	22,558	1,075	35,446	17,545	102,249	7,120
Sept.	158,262	40,446	99,737	22,558	1,075	22,558	1,075	35,446	17,545	102,249	7,120
Oct.	158,262	40,446	99,737	22,558	1,075	22,558	1,075	35,446	17,545	102,249	7,120
Nov.	158,262	40,446	99,737	22,558	1,075	22,558	1,075	35,446	17,545	102,249	7,120
Dec.	158,262	40,446	99,737	22,558	1,075	22,558	1,075	35,446	17,545	102,249	7,120
Totals	2,774,561	794,835	1,248,234	235,952	80,733	256,780	739,355	1,284,412	82,399	106,863	946,920

*Total to Dec. 1, 1912, 87,456,727 cubic yards. †Excavated in 1904. May to December 34,472 cubic yards.
††Total to Dec. 1, 1912, 12,384,655 cu. yds. of which 192,769 cu. yds. were removed by sluicing.
‡Dry excavation at Miraflores Locks, 1911-36,382 cubic yards. 1912: total to Dec. 1, 2,196,198 cubic yards.
§Total to Dec. 1, 1912, 1,248,234 cubic yards. 1913: 382 cubic yards.
||Total to Dec. 1, 1912, 1,248,234 cubic yards. 1913: 382 cubic yards.
¶Total to Dec. 1, 1912, 1,248,234 cubic yards. 1913: 382 cubic yards.
‡‡Total to Dec. 1, 1912, 1,248,234 cubic yards. 1913: 382 cubic yards.
§§Total to Dec. 1, 1912, 1,248,234 cubic yards. 1913: 382 cubic yards.
|||Total to Dec. 1, 1912, 1,248,234 cubic yards. 1913: 382 cubic yards.
¶¶Total to Dec. 1, 1912, 1,248,234 cubic yards. 1913: 382 cubic yards.
‡‡‡Total to Dec. 1, 1912, 1,248,234 cubic yards. 1913: 382 cubic yards.
§§§Total to Dec. 1, 1912, 1,248,234 cubic yards. 1913: 382 cubic yards.
|||§Total to Dec. 1, 1912, 1,248,234 cubic yards. 1913: 382 cubic yards.
¶¶¶Total to Dec. 1, 1912, 1,248,234 cubic yards. 1913: 382 cubic yards.
‡‡‡‡Total to Dec. 1, 1912, 1,248,234 cubic yards. 1913: 382 cubic yards.
§§§§Total to Dec. 1, 1912, 1,248,234 cubic yards. 1913: 382 cubic yards.
|||§§Total to Dec. 1, 1912, 1,248,234 cubic yards. 1913: 382 cubic yards.
¶¶¶¶Total to Dec.

GATUN DAM.

Hydraulic Fill Completed—Dry Fill Near Completion.

Gatun Dam is almost completed. A few thousand yards of earth remain to be dumped here and there upon it, and the lake side must be paved with rock; but the great bulk of the work is done. Eleven million cubic yards of earth and rock in the dry, and 10,729,000 of hydraulic fill have been piled up across the valley of the Chagres River at Gatun, and the dam has already begun to serve its purpose of forming a lake. The water is backed up to a depth of 50 feet, and it covers the bottom land of the valley and extends with spider-like arms into all the depressions in the hill-girt basin.

A stranger who stands on one of the hills on which the village of Gatun rests finds it difficult to imagine that the wind-tossed lake at his feet was not formed there by nature, and that the grass-grown ridge which stretches across the valley has not always been a part of the hills whose feet it joins. The impression is rather heightened than otherwise by the sight of trains running about on the broad surface of the dam.

Even one who has seen the dam grow from the first carload of earth dumped across the bed of the Chagres River finds it difficult to realize that only four years ago there was, a hundred feet beneath the present pile of rock and earth, a village with a hundred houses, a church, a dozen cantinas, and a half dozen Chinese shops. The river made a great bend there from one side of the valley to the other, and on its bank, under the east half of the present dam, was the old native village. To this place canoes from all points in the Chagres basin brought their produce, for Gatun was a market place. On market days the canoes began to arrive at daybreak, many of them coming from 30 miles up the river with their cargo of people, pigs, bananas, yams, chickens, and fruits. They would tie up along the bank and hold their little fair, much as in days long past the old Spaniards dealt for weeks at the great Porto Bello fair.

In THE CANAL RECORD of December 6, 1911, there was printed an historical sketch of the old village, and since then nothing has happened there, except the building of the dam. From the beginning of active canal work this has been regarded as a good site for a dam in case a canal with a high level were built. Gatun was first suggested as a site for a dam at the International Congress of surveys for an Inter-oceanic Canal held in Paris in May, 1879, when the Lesseps plan for a sealevel canal was adopted. It was considered later by the French when they turned from the sealevel to the lock plan, and was decided upon by the minority members of the Board of Consulting Engineers for the Panama Canal in January, 1906, as the proper site, because it afforded the most suitable foundation for both dam and locks.

Prior to this decision surveys had been made, and these were continued until the final report was made in 1908 on the foundations and on the materials available nearby for a suitable hydraulic fill. Clearing and the dumping of material were begun in 1907, and the hydraulic fill in March, 1909.

The plan that has been followed is to build two great ridges of earth and rock across the valley from east to west, parallel to one another and about 600 feet apart at the natural

level of the ground. Between these an impermeable core of water-borne sand and clay was deposited by suction dredge. Experiments made prior to the beginning of the hydraulic fill showed that material pumped over the ridges of earth and rock from both sides would be deposited from center to sides according to its weight, the fine, light clay and sand flowing to the center. This is what has happened, and Gatun Dam on the eve of completion is simply a solid mass of earth and rock, fine and closely packed at the center along the axis, and growing coarser as it approaches the sides.

The dry material in the parallel ridges was first deposited from trains run out on long trestles built over the bottomland. Gradually mounds were formed from which earth and rock could be dumped without the use of trestles. From 1907 to the present time, the dumping of material from Culebra Cut, the lock pits, Mindi, and borrow pits has not ceased and it has been subjected to the packing of the heavy trains running upon it and of the almost incessant rains that visit this part of the Isthmus, an average of 134 inches a year the past seven years. In consequence of this dual tamping process the fill has shown little shrinkage, less than 5 per cent in fact. Embankments in the States frequently shrink or settle 20 or 30 per cent, and the back fill of the locks at Gatun has shrunk 15 per cent.

March, 1909, to September, 1912 are the dates between which the hydraulic fill was made. During this time from one to four 20-inch suction dredges poured their streams of water heavy with clay and sand over the ridges, and the water draining off left the solidly packed core. This core was built up from the ground to a height of 95 feet by the water process, and then brought up to 105 feet by dumping of dense clay found in the borrow pits nearby.

Last week there were still a few parts of the water-borne fill exposed. It is a blue clay so waterproof that it is slow to dry out. This has flowed into every interstice in the ridges of rock and earth, until the whole mass at the center of the dam has become like a rubble wall, every rock of which is cemented to another. The argillaceous sandstone, or blue rock, found everywhere on the Isthmus, hard until exposed to air, is formed of such clay; and it is probable that in time the core of the dam itself will solidify into such rock.

The men who built the dam include Americans, Spaniards, Italians, Greeks, East Indian coolies, and West Indian negroes. They numbered 200 in 1907, 2,000 when the force was at its highest in 1911, and now that the work is practically done they have dwindled to about 300, of whom 150 are employed on the spillway. When the work was at its highest point, four suction dredges were at work and 100 trainloads of rock and earth were dumped in a day.

The dam, the essential feature of the high level canal, has been subjected to more adverse criticism than any other part of the work. It was believed at one time by some experts that the valley of Gatun was unsuited to hold so great a structure as this, one and a half miles long, 2,200 feet broad, and 105 feet high. All the investigations showed the fear unfounded; and now the dam itself proves this, for it is performing its work of holding back the water of the Chagres, and gives no evidence of weakness either in foundation or in any of its parts.

PANAMA RAILROAD COMPANY.

Resumé of Finances and Operations During Fiscal Year Ending June 30, 1912.

The net income of the Panama railroad and steamship line, after meeting the total cost of operation, together with fixed charges of \$39,954.12, and depreciation of rolling stock, floating and plant equipment, which amounted to \$232,489.20, was \$1,762,049.22 during the fiscal year ending June 30, 1912. This was an increase of \$50,968.83 over the net income during the preceding fiscal year, which was \$1,711,080.39.

The company's accounts were audited to June 30, 1912, by certified public accountants. At the end of the fiscal year the company had \$2,318,475.51 of available funds on deposit with its designated depositaries, and securities, purchased at a cost of \$1,500,000, held in a reserve fund established September 12, 1911, upon which there is now \$52,701.08 of accumulated interest to be further invested.

In accordance with the policy of the United States Government in relation to its property, the company discontinued on March 4, 1910, all marine and fire insurance. One of the accompanying conditions was that the company was to be reimbursed, through the Isthmian Canal Commission, for any losses such as had been previously covered by underwriters. Those losses, amounting to approximately \$300,000, remain unpaid, the interpretation of the law being in litigation.

The indebtedness of the railroad to the United States Government on account of advance for new equipment and construction, and retirement of first mortgage, 4½ per cent bonds, remains at \$3,247,332.11, as it was on June 30, 1911, the company having made no payment on account of principal or interest, in accordance with Congressional action.

The profits of the year were earned by the railroad, the steamship line having failed, as usual, and as anticipated under the conditions of its operations, to pay expenses. It yielded a deficit of \$305,742.85. Of this, \$70,057.29 was lost on the operations of the chartered steamer *Lewis Luckenbach* and \$21,739.20 on the chartered *San Mateo*. The amortization through twelve months of \$233,553.24, the total cost of repairs made to steamers in lieu of charter hire, amounted to \$207,488.88; the remainder, \$26,064.36, together with \$19,219.46, the net cost of the accident to the steamship *Allianca* on August 30, 1911, off Norfolk, which involved a general average not yet adjusted, will be carried in account to next year. The rental of additional wharfing space at Pier 52, North River, New York, caused an extra expenditure of \$13,071.88; and a loss of \$65,519.73 was attributed to increased cost of stevedoring and extra labor in handling cargo on New York piers. A decrease of 1,560 in the number of passengers carried by the steamship line caused a loss of \$16,158.99 in the revenue from that source. These losses were offset by an increase of 45,164 tons in cargo moved by the company's steamers, with a resulting additional revenue of \$96,389.90. On 134,967 net tons of cement carried to the Isthmus for the Isthmian Canal Commission, the charge was \$1.25 per ton, while the price paid to vessels of foreign registry employed to transport 161,494 gross tons was from \$1.84 to \$2.40 per ton of 2,240 pounds. Considerable loss is ascribed also

to failures on the part of Pacific co-carriers to make scheduled connections, causing the company's steamers occasionally to return light to New York.

The embarrassments of the steamship line previously mentioned were augmented by a strike among firemen, oilers, watertenders, sailors and petty officers near the close of the fiscal year. This threatened to tie up the line completely, and, as it was deemed inadvisable for a Government-owned line to employ strikebreakers, the ships, by the consent of the Government, were all manned for one round voyage by enlisted men from United States war vessels lying in New York harbor. Sailing dates were thereby protected and serious loss averted.

The development of direct coastwise traffic required accommodations in excess of the facilities at Balboa, resulting in serious complaints by Pacific co-carriers. The construction of a new concrete wharf at Balboa has since afforded only temporary relief, because of the collapse of the Isthmian Canal Commissions 1,000-foot lumber wharf.

RAILROAD.

On the railroad line the total revenue on freight traffic increased 19.25 per cent during the fiscal year. The gross revenue from passenger transportation increased 7.39 per cent, while the number of passengers carried increased 14.32 per cent. The discrepancy was due to a reduction of more than a hundred per cent in the company's through passenger rates, and to a reduction of the lump sum paid by the Isthmian Canal Commission for transportation of its employees on the Isthmus. Since October, 1910 this has been \$9,000 per month as contrasted with the former sum of \$11,009 per month.

Freight amounting to 1,871,076 tons was transported over the railroad, in the following percentage proportions:

	Per cent.
Through commercial freight.....	36.80
Local and I. C. C. freight.....	49.93
Local commercial freight.....	10.37
Panama Railroad Company's freight.....	2.90

The total revenue of the railroad from freight was \$2,820,951.14, received in these percentages:

	Per cent.
Through commercial freight.....	66.88
Local commercial freight.....	15.80
Local I. C. C. freight.....	17.32

The railroad's total revenue of \$4,677,366.76 was derived from the following sources, in percentage:

	Per cent.
Through commercial freight.....	40.34
Local commercial freight.....	9.33
Local I. C. C. freight.....	10.44
Local passengers.....	12.58
Miscellaneous.....	27.11

RATES.

The company participated during the year in a general advance in rates on foreign cargo in both directions across the Isthmus, though it originated no advances. All increases were made by initial carriers at points of origin, and concurred in by the Panama Railroad Company as intermediate carrier, and by the connecting steamship lines as final carriers. There was no material change of rates on United States coastwise traffic. The division of those rates among co-carriers has been maintained as established on June 1, 1911. Space on outward-bound steamers of the company, available for coastwise cargo, was distributed on the basis of 57 per cent to the California-Atlantic Steamship Company and 43 per cent to the Pacific Mail Steamship Company.

Relations with the company's foreign co-carriers continued in the main satisfactory. By arrangement with the Postmaster of Great Britain compensation for the Isthmian transit of closed mails from Spain and Italy to South and Central America, previously made on the basis of actual weights, is now made on Postal Union statistics.

SUPPLIES.

During the fiscal year supplies for the commissary department on the Isthmus were purchased and forwarded by the New York and New Orleans offices at an aggregate cost of \$4,089,993.64. During the same period the company's requirements of coal on the Isthmus were met by forwarding 504,994 gross tons from various ports in the United States.

The coal contract having expired on April 1, 1912, the company entered into contract with the Pocahontas Fuel Company, in competition with other bidders, to meet requirements of coal for the Isthmus, up to 50,000 tons a year, for two years and six months, ending October 1, 1914, at a price of \$2.70 a ton for the first year and thereafter at \$2.65 a ton, should the ruling rate for coal at Norfolk, Newport News, and Sewalls Point fall below \$2.70. This is a departure from the practice of many years of inviting competitive bids annually. At the same time contract was made with the Ebensburg Coal Mining Company, J. H. Weaver & Company, selling agents, for bunker coal for the twelve months ending April 1, 1913, at \$1.89 per ton, an advance of 11 cents per ton over the cost during the previous year.

PLANT CHANGES.

Out of the net revenue \$1,385,568.25 was applied to additions and improvements to plant and equipment; \$1,241,161.94 was expended as follows:

New piers at Cristobal.....	\$735,925.69
New Washington Hotel, Colon.....	162,095.16
New concrete wharf at Balboa.....	343,141.09

The United States Government having accepted the installation of a submarine signal bell at Barnegat Inlet, the company authorized the equipment of all its vessels with submarine signal devices. The sea-going tug *Phoenix*, which was transferred from Colon to New York, was sold for \$25,000. The *Phoenix* was bought in 1907 for \$57,942.53, and after its five years of continuous service repairs necessary would have cost approximately \$30,000. The company accepted two of the six cement conveyors furnished by the Alvey-Ferguson Company for installation on the wharf at Cristobal, and later took title to all of the plant, at a total expenditure, under the contract, of \$28,818.89. The original contract, for \$29,000, was let in August, 1909, but difficulty and delay were experienced in making the conveyors meet the specifications, with a resultant loss to both the contractors and the company. In connection with the construction and taking over of the relocated line of the railroad, the telephone and telegraph system was remodelled and reconstructed along the relocation. The system is susceptible of enlargement to meet plans for a system adequate to the requirements of the railroad and the Canal, when the latter is in operation, and of commercial business. In anticipation of the opening of the Canal the company is receiving applications for wharfage accommodations and leases of land at the terminals.

SOCIAL LIFE OF THE ZONE.

Christmas at the Penitentiary.

In accordance with the practice of former years, the Christmas Committee for the relief of the convicts in the Canal Zone penitentiary will furnish a "treat" for the inmates on Christmas day. The treat consists of sweets, not including candies; fruits, nuts, and chewing tobacco. Contributions of any of these articles or of money will be received by the district quartermaster at any of the Canal Zone stations or they may be forwarded to the Rev. S. Moss Loveridge, penitentiary chaplain, or to Mrs. C. A. Devol, chairman of the committee. The funds remaining from the Christmas donations are apportioned by the committee to the relief of discharged convicts. The men are deported on being discharged and they are frequently entirely without means with the exception of the few dollars allowed to them by the government. The money is used to help them, often to purchase warm clothing, in case they are discharged in winter. Cakes and all other articles intended for the Christmas dinner should be forwarded through the local district quartermasters on December 24.

Missionary to the San Blas Indians.

On Friday afternoon, December 6, the Gatun Mission Study Class had as speakers and guests Miss Annie Coop, American missionary, and Miss M. Blackmore, English missionary. Miss Coop told of her visit to the San Blas country in 1909, and of her desire to locate there as teacher and missionary. She spoke of the interest of some of the chiefs in the enterprise and of the opportunities for educational work among the women and children of the villages. She is now waiting in Colon for a conference with one of the chiefs, and hopes to proceed to the Mulatas Islands within a short time, where she will establish her school. Miss Blackmore has been for fifteen years a missionary in Nicaragua. In her talk she gave interesting details of the life there and of her experiences in a difficult mission field. Miss Blackmore is not connected with any missionary society; she supports herself and her work entirely by the sale of needlework and fancy articles.

Women's Clubs.

The general meeting of the Cristobal Women's Club was held at the Commission clubhouse on Wednesday, December 4, the program being under the home department. The Rev. Edward J. Cooper was the speaker. Meetings of the club scheduled for this month are as follows: Home department, December 11, subject, model kitchens; art and literature department, December 18, subject, review of new books; board meeting, December 18, at 9 a. m.

Canal Zone Rifle Club.

The fourth monthly shoot of the Canal Zone Rifle Club for the Garlington medal at 300 and 600 yards, ten shots without marking, was held at Pedro Miguel on December 8. The winner, Archie Kennedy, established a new high score by making 91 out of 100.

Steamshovel and Dredgemen.

Local No. 19, I. B. of S. S. and D. M. will hold its monthly meeting on Sunday, December 15, at the I. C. C. lodge hall, Empire, at 12.15 p. m.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

Schedule of moving picture dates for week, December 16 to 21, is as follows: Monday, Gatun; Tuesday, Cristobal; Wednesday, Gorgona; Thursday, Corozal; Friday, Empire; Saturday, Culebra.

Standing of the bowling league, December 9, was as follows:

Team.	Won.	Lost.	P. C.
Empire.....	20	10	.667
Gatun.....	18	12	.600
Cristobal.....	17	13	.567
Culebra.....	14	13	.519
Corozal.....	11	19	.367
Gorgona.....	7	20	.259

Standing of the basketball league, December 9, was as follows:

Team.	Won.	Lost.	P. C.
Empire.....	7	0	1.000
Corozal.....	4	3	.571
Gatun.....	3	3	.500
Gorgona.....	2	5	.286
Cristobal.....	1	6	.143

The first in a series of entertainments by performers from the States will be given by Miss Gay Zenola Mac Laren, beginning December 16. Her repertoire consists of the following plays: "Within the Law," "The Governor's Lady," "The Sign of the Rose," "The Woman in the Case."

Miss MacLaren's engagements for the first week are as follows: December 16, Empire; 17, Gorgona; 18, Gatun; 19, Culebra; 20, Porto Bello; 24, Cristobal; 25, Corozal. Return engagements at the clubhouses and engagements at other towns will be arranged after Miss MacLaren's arrival and dates will be published in next week's issue of THE CANAL RECORD.

COROZAL.

On Saturday, December 7, Corozal won two out of three games at Corozal, with the following scores:

Gatun.	Corozal.
O'Meara..... 122 123 152	Bordt..... 190 169 175
Oettle..... 145 147 203	Wilkins..... 198 138 148
Barte..... 161 148 153	Souder..... 147 191 169
Hodges..... 116 172 190	Buchanan..... 147 134 145
Swallow..... 157 193 155	Coonly..... 170 166 150

Total..... 701 783 853 852 798 787

Probably the most exciting game of basketball of the season was played at Corozal on Saturday, December 7, and was won by Empire; score, 21 to 19:

Empire.	Points	Fouls	Corozal.	Points.	Fouls
Sawyer.....	4	2	F Roberts.....	3	3
Cushin.....	6	0	F Wright.....	8	0
Hepler.....	0	1	C Kenaley.....	0	0
			Porter.....	2	0
Rowan.....	7	0	G Morris.....	4	1
Adams.....	4	2	G McCathern.....	2	1
Greening.....	0	0			

Saturday, December 14, Cristobal will play at Corozal.

CULEBRA.

One hundred and forty people attended the moving picture show on Wednesday night, December 4. Mr. Weston of Cristobal sang four songs, two of which were illustrated by stereopticon slides.

A new talking machine has been purchased, together with new records. The instrument was used to furnish music during the picture show on Tuesday night, December 10.

A pair of shoes will be given to the one making the highest score in bowling bigpins during the month of December. A similar prize is offered for high score in duckpins.

EMPIRE.

Twelve men joined the first-aid class, which meets every Monday evening at 7. The subject for Monday, December 16, will be "Common Accidents, Prevention of and Practice Work." All men are invited to attend.

A set of new billiard balls has arrived, with new cloths for the tables and a number of new cues. The tables will be recovered as soon as possible.

The handball tournament recently started has 16 men entered.

The second number of "The Forum" was given Sunday, December 8. Mr. C. W. Farnham of St. Paul, Minnesota, gave a series of readings from the poems of James Whitcomb Riley. The musical program consisted of violin solos by Mr. Whitehead of Culebra, and selections by the Tropical Male Quartet. The next in the series will be given Sunday evening, December 22. The speaker will be Mr. Childers of Gatun. There will be music by the Gorgona Y. M. C. A. chorus.

On Saturday, December 14, Empire will play the Gatun basketball team at Empire. This is the last game in the basketball league. So far Empire has not been defeated.

GORGONA.

About 300 people attended the motion picture show on Friday evening. The attendance of these exhibitions has been increasing recently.

A new supply of Gorgona pennants has arrived; also a supply of pamphlets summarizing the recent

mock political campaign on the Isthmus. These can be secured at the desk.

The handball players are much interested in the game and new members are joining every week.

The Gorgona Y. M. C. A. chorus will sing at Corozal on Sunday, December 15.

The interest in physical work is increasing: more members are joining and enjoying the benefits therefrom.

Gorgona Y. M. C. A. will give a special Christmas entertainment this year. The chorus of girls and boys is rehearsing twice a week. Two short plays will also be presented.

Empire took two out of three games on Saturday night in the bowling match. The following are the scores:

Gorgona.	Empire.
Roper..... 194 139 158	Gus..... 158 177 125
Arnold..... 120 138 150	Potter..... 169 169 141
Sims..... 170 152 148	Edwards..... 173 177 171
Keppeler..... 112	Pearson..... 176 148 166
Stewart..... 131 142	Huson..... 162 141 164
King..... 160 156 174	

Total..... 756 716 772 838 812 767

The following are the winners of the ragtime tournament, in order: Sims and Keppeler; Keppeler and King; Calloway and Stewart. Dense took first place for high three games, with 597 points.

GATUN.

Twenty members of the boys' department, under the direction of Physical Director Woolworth, enjoyed an outing to Toro Point on Saturday, December 7. The next outing will be to Porto Bello.

Copies of *The Political Times*, a local publication, containing the results of the political elections held recently in the various Commission clubhouses, are now on sale at the desk.

A class for instruction in first aid to the injured will be started in a few days. The physical director will have charge. The International Y. M. C. A. Red Cross examination will be held at the conclusion of ten lectures and official certificates will be given to those who pass these examinations.

The membership of the Gatun clubhouse was increased sixteen during the month of November. The total membership now is 471.

A third Spanish class for men was organized on Wednesday evening, December 11. It will be composed of beginners only and will meet from 9.30 to 10.30 p. m.

The Cristobal basketball team met defeat at Gatun on Thursday evening, December 5. Score, 39 to 30; referee, Sarter; attendance, 200.

The Gorgona basketball team played at Gatun on Tuesday, December 10.

The boys' athletic contest will close on December 18. The present standing is:

Jervey..... 1,558	Griffith..... 714
Meis..... 1,525	Witt..... 714
Cummings..... 1,509	Bath..... 602
Sisson..... 1,269	Kerr..... 599
Gray..... 1,198	Neville..... 587
Waid..... 1,188	Walsh..... 556
Billett..... 1,132	Sweek..... 505
Quinn..... 1,100	Graham..... 291
Bethea..... 1,077	Sibert..... 264
Loulan..... 1,033	Viberg..... 244
R. Appleton..... 751	DePoorter..... 223
Carkeet..... 731	

The senior athletic contest will close on December 20. The present standing is:

Martinoff..... 995	Jensen..... 122
Loulan..... 822	McMahan..... 116
Straub..... 685	Ogilvie..... 100
Jendres..... 508	Porter..... 86
Flynn..... 337	Dillon..... 85
Miller..... 296	Carpenter..... 84
Baeder..... 280	Dickson..... 66
Mitchell..... 240	Harper..... 64
Daniels..... 215	Tuthill..... 64
Ourand..... 181	Corson..... 55
Allbright..... 161	Curry..... 50
Huber..... 146	Nobel..... 21
Atkinson..... 129	Fomon..... 20

CRISTOBAL.

There was an attendance of 140 at the moving picture show Thursday night. The next show will be on Friday, the 13th, and Mr. E. L. Mosher will sing.

On Thursday night, December 12, the Forum will hold the first program at Cristobal. Mr. W. B. Childers will speak on "Land, Labor and Capital" and the Tropical Male Quartet will sing.

On Wednesday night, December 18, those interested in the organization of a literary and debating society will meet at the Y. M. C. A. at 8 o'clock. All the former members are urged to come with ideas and suggestions. This club will work in conjunction with the "Forum" and will be of interest to all. Men who are not members of the Y. M. C. A. are cordially invited to take part in this society.

On Saturday night, the Cristobal basketball team won from the Gorgona basketball team by the score of 19 to 10.

OFFICIAL CIRCULARS.

Acting Chief Sanitary Officer.

CULEBRA, C. Z., December 3, 1912.

CIRCULAR No. 465.

During the absence of Col. W. C. Gorgas, Chief Sanitary Officer, beginning December 4, 1912, Lieut.-Col. John L. Phillips is designated as Acting Chief Sanitary Officer.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Shop Expense Percentage.

CULEBRA, C. Z., December 6, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

In accordance with the provisions of Circular No. 169-E the following shop expense percentage for each shop is hereby fixed effective December 1, 1912, and will be applied until further orders, to the distributed labor used in all shop work, in accordance with the provisions of Circular No. 264-A, viz:

Division or Shop.	Shop expense percentage
Mechanical Division.....	50
Dry Dock shop.....	50
Balboa shop.....	40
Porto Bello shop.....	60
Toro Point shop.....	50
Panama railroad shop.....	30

Circular letter from this office dated August 5, 1912, is revoked.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Hunting in Canal Zone.

CULEBRA, C. Z., December 9, 1912.

CIRCULAR No. 372-A:

Hunting within that part of the Canal Zone lying west of the Canal line and between the Pacific Ocean and Gatun Lake is hereby prohibited. Employees violating this order will be discharged from the service of the Commission or the Panama Railroad Company. This is necessary to protect the four reservoirs in that territory which supply water for the Canal Zone towns and the city of Panama.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

In Absence of Electrical and Mechanical Engineer.

CULEBRA, C. Z., December 6, 1912.

MEMORANDUM FOR MR. ROUSSEAU:

Subject to your approval, effective December 9, 1912, and until my return, Mr. F. C. Clark, Acting Superintendent of Erection, and Mr. C. B. Larzelere, Assistant Engineer, will report direct to you in matters relating to erection and design respectively. In the absence of Mr. Larzelere, Mr. C. C. Coppin, Assistant Engineer, will be in charge of the drafting force.

EDW. SCHILDBAUER,
Approved: Electrical and Mechanical Engineer.
H. H. ROUSSEAU,
Acting Assistant Chief Engineer.

Married.

GARVER-DOWNER—On November 20, at Winchester, Va., Miss Cora Downer of Harrisburg, Pa., to Mr. John A. Garver of Las Cascadas, the Rev. C. W. Smith, rector of Christ Episcopal Church, officiating. Canal Zone residence, Las Cascadas.

DONNELLY-GARVER—On November, 20, at Winchester, Va., Miss Ida M. Garver of Harrisburg, Pa., to Mr. Eugene A. Donnelly of Las Cascadas, the Rev. C. W. Smith, rector of Christ Episcopal Church, officiating. Canal Zone residence, Las Cascadas.

ALBIN-SMITH—At noon on Thursday, December 5, in Cristobal, Miss Eleanor Jane Smith, of Newton, Mass., to Walter Harry Albin, of Kingman, Kansas, the Rev. Carl H. Elliott, officiating. Canal Zone residence, Empire.

HERSH-ALTHOUSE—In Quarryville, Pa., on Monday, December 2, Miss Essie Melissa Althouse to Walter L. Hersh. Canal Zone residence, Gatun.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Culebra, Sunday, December 15, at 4.30 p. m. The program follows:

1. March—Vesuvius.....	Kaine
2. Selection—Bohemian Girl.....	Balfie
3. Waltz—Idle Hours.....	Wood
4. Overture—Le Pre aux Clercs.....	Harold
5. Popular song—Moonlight Bay.....	Wenrich
6. (a) Intermezzo—La Danseuse.....	von Blome
(b)..... Simple Aveu.....	Thome
7. Descriptive—Evening Idyls.....	Barnhouse
Sunset, evening festivities, dreamland.	
8. Medley of popular songs.....	Harris
9. March—Our Leader.....	Dale

CHARLES E. JENNINGS, Musical Director.
The next concert will be given at the Tivoli Hotel, Ancon, December 22, at 8 p. m.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

No material changes have been made in the prices of food storage commodities sold at the Commissary stores since the publication of the price list last week.

Rainfall from December 1 to 7, 1912, Inclusive.

STATIONS.	Maximum in one ay.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	.27	2	.51
Balboa.....	.38	2	.93
†Miraflores.....	.89	4	1.04
Pedro Miguel.....	.26	4	.41
Rio Grande.....	.45	4	.55
<i>Central Section—</i>			
Culebra.....	.42	4	.68
*Camacho.....	.58	1	1.05
Empire.....	.65	4	.90
Gamboa.....	.58	4	.67
†Juan Mina.....	.18	3	.20
Alhajuela.....	.04	3	.06
*El Vigia.....	.02	6	.02
Gorgona.....	.42	4	.48
†Frijoles.....	.70	3	.86
†Monte Lirio.....	.12	3	.14
<i>Atlantic Section—</i>			
Gatun.....	.42	3	.45
*Brazos Brook.....	1.36	3	1.55
Colon.....	2.13	3	2.13
Porto Bello.....	.31	6	†.62

*Standard rain gage—readings at 5 p. m. daily.
Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., December 6.

November Rainfall for Three Years.

STATIONS.	1910	1911	1912	Station Av.	Years of record	Rain days 1912
<i>Pacific Section—</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>		
Ancon.....	4.29	7.57	6.38	10.45	16	22
Balboa.....	3.97	5.55	6.14	9.09	14	21
†Miraflores.....	10.20	9.24	11.89	12.23	5	22
Pedro Miguel.....	10.02	7.49	8.43	10.99	5	24
Rio Grande.....	11.22	13.62	7.01	11.12	8	25
<i>Central Section—</i>						
Culebra.....	10.81	12.37	7.59	12.30	24	24
*Camacho.....	13.15	12.43	7.06	13.29	7	23
Empire.....	8.85	11.73	7.24	10.99	8	24
Gamboa.....	16.90	10.09	6.56	12.26	30	28
Juan Mina.....	14.39	10.45	12.75	12.53	3	27
Alhajuela.....	14.87	13.39	9.62	14.24	14	27
El Vigia.....	14.20	9.54	10.79	16.45	5	28
Gorgona.....	11.54	10.23	7.15	13.11	9	23
Frijoles.....			15.88		1	27
Trinidad.....	22.95	18.76	20.36	21.91	5	28
Monte Lirio.....	25.60	20.05	16.35	24.46	5	25
<i>Atlantic Section—</i>						
Gatun.....	26.06	15.78	19.18	22.40	8	29
Brazos Brook.....	29.28	18.86	21.86	24.69	7	30
Colon.....	30.04	15.81	21.81	21.86	42	27
Porto Bello.....	23.08	24.40	25.82	29.60	6	27

The following ships arrived at, or departed from the port of Balboa during the week ending December 7: Arrivals—December 3, *Huelga*, from Callao; December 4, *Palena*, from Valparaiso; December 6, *Barracouta*, from San Francisco; December 7, *Kansas City*, from San Francisco.

Departures—December 1, *Urubamba*, to Callao; December 1, *Lewis Luckenbach*, to San Francisco; December 3, *Quilbo*, to Valparaiso; December 4, *U. S. S. Buffalo*, to Corinto; December 4, *Peru* (P. S. N.), to Guayaquil; December 6, *Cusco*, to San Francisco; December 7, *Seward*, to San Francisco.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending December 18, 1912 (75th meridian time):

DATE.	Low	High	Low	High
	A.M.	A.M.	P.M.	P.M.
December 12.....		5.47	12.09	6.18
December 13.....	12.31	6.26	12.50	6.57
December 14.....	1.14	7.05	1.30	7.37
December 15.....	1.58	7.45	2.14	8.20
December 16.....	2.45	8.30	3.00	9.05
December 17.....	3.38	9.22	3.51	9.57
December 18.....	4.31	10.20	4.45	10.50

Sale of Dental Outfit.

OFFICE OF CHIEF SANITARY OFFICER,

ANCON, C. Z., December 5, 1912.

Bids will be received in the office of the Chief Sanitary Officer up to 3 p. m., Monday, December 23, 1912, when they will be opened:

For the purchase, as a whole, of a dentist's outfit; recently in use by the District Dentist, Gorgona, consisting of chair, "Imperial"; cabinet, instrument, mahogany, Corwin outfit; dental engine, electric anealer, electric lathe, set of pluggers, spittoon, fountain, Weber's; tables, dental, mahogany, glass tops; vulcanizer; and other dental apparatus and instruments.

The outfit can be seen during working hours, 8 to 12 in the forenoon and 2 to 5 in the afternoon, on any week day, by applying to the District Physician at Gorgona.

Terms: Cash. The United States reserves the right to reject any and all bids. Bids should be sealed and marked "Purchase of Dental Outfit at Gorgona."

JOHN L. PHILLIPS, Acting Chief Sanitary Officer.

Sale of Public Buildings at Nombre de Dios.

OFFICE OF THE CHIEF QUARTERMASTER,

CULEBRA, C. Z., November 14, 1912.

Sealed proposals will be received at this office until 3 p. m., Saturday, December 14, 1912, and then opened, for the purchase of any or all buildings, including plumbing, owned by the Commission at Nombre de Dios. List of buildings and full information will be furnished upon application to any district quartermaster, or at this office. Proposals must be accompanied by five percentum (5%) of amount bid. The Government reserves the right to accept or reject any or all bids. Envelopes containing proposals should be endorsed "Proposal for purchase of buildings," and addressed to Col. C. A. Devol, Chief Quartermaster, Culebra, C. Z.

Sale of Miscellaneous Property at Public Auction.

The storekeeper or the Medical Storehouse, Colon Hospital Grounds, Colon, will sell at his office, on Monday, December 16, 1912, at 1 p. m., to the highest bidder, for cash, a miscellaneous assortment of Isthmian Canal Commission property, some of which is second-hand, some new. This property consists mostly of furniture, clothing and household utensils and is subject to inspection by interested parties between the hours of 2 p. m. and 4 p. m., on all working days.

The Government reserves the right to accept or reject any or all bids.

For further information and a detailed list of the items to be offered for sale, apply by letter to the Medical Storekeeper, Cristobal, C. Z.

By direction of the Chief Sanitary Officer,

JOHN J. MORAN, Medical Storekeeper.

Misdirected Letters.

ANCON, C. Z., December 11, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressee:

Barker, Arthur (pkg.) Kunkel, Mrs. Edward F.
Bieneman, W. J. Liggie, A.
Bjorling, C. G. McCulloch, E. D.
Blake, Dr. D. E. McDevitt, Dr. John F.
Booth, W. G. McGee, W. G.
Bryce, Timothy Mead, C. Edwin
Burns, W. P. Mellon, J. J.
Clark, Edward M. Nock, Ivan F.
Clark, Walter Orewiler, L. H. (2)
Comer, R. O. Osorio, H.
Cutler, Dr. (photo) Ragsdale, Mrs. H. C.
Davis, Cal Taboga Robles, M. J.
Doran, Thos. J. Roldanz, Antonio R.
Frederickson, Albert A. Rydell, O. W.
Gardner, Mrs. Minnie L. Shelley, James
Holcomb, Wm. H. Smith, James H.
Irvin, Albert Solly, Jos. B. (2)
Jackson, Jno. Stallmack, A.
Johnson, Mrs. Mattie Stowell, Frank
Johnson, Chas. H. Van Brunt, E. S.
Kennedy, Geo. Webber, Mike
Kennedy, Ollie Wellon, Albert
King, George Welsh, Thomas E.
Knight, Miss Elsie M. Williams, T. J.
Wright, John W.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, December 7, 1912. All heights are in feet above mean sealevel:

DAY AND DATE	Vigla.	Alhajuela	Gamboa.	Gatun Lake.
Sun., Dec. 1.....	130.7	96.2	56.4	56.0
Mon., Dec. 2.....	129.0	94.9	56.0	55.7
Tues., Dec. 3.....	128.4	94.5	55.4	55.3
Wed., Dec. 4.....	128.1	94.3	55.1	54.9
Thurs., Dec. 5.....	127.8	94.0	54.7	54.5
Fri., Dec. 6.....	127.7	94.0	54.2	54.0
Sat., Dec. 7.....	127.7	93.8	53.8	53.6
Height of low water to, the nearest foot.....	125.0	91.0	44.0	

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL

Colon.....	P. R. R. Monday.....	Dec. 9
Advance.....	P. R. R. Saturday.....	Dec. 14
Panama.....	P. R. R. Friday.....	Dec. 20
Allianca.....	P. R. R. Friday.....	Dec. 27
Colon.....	P. R. R. Friday.....	Jan. 3
Advance.....	P. R. R. Thursday.....	Jan. 9
Panama.....	P. R. R. Wednesday.....	Jan. 15
Allianca.....	P. R. R. Tuesday.....	Jan. 21
Colon.....	P. R. R. Tuesday.....	Jan. 28
Advance.....	P. R. R. Monday.....	Feb. 3
Panama.....	P. R. R. Monday.....	Feb. 10
Allianca.....	P. R. R. Saturday.....	Feb. 15
Colon.....	P. R. R. Friday.....	Feb. 21
Advance.....	P. R. R. Friday.....	Feb. 28
Panama.....	P. R. R. Friday.....	Mar. 6
Allianca.....	P. R. R. Wednesday.....	Mar. 12
Colon.....	P. R. R. Tuesday.....	Mar. 18
Advance.....	P. R. R. Tuesday.....	Mar. 25
Panama.....	P. R. R. Monday.....	Mar. 31
Allianca.....	P. R. R. Saturday.....	Apr. 5
Colon.....	P. R. R. Saturday.....	Apr. 12
Advance.....	P. R. R. Saturday.....	Apr. 19
Panama.....	P. R. R. Friday.....	Apr. 26

CRISTOBAL TO NEW YORK.

Allianca.....	P. R. R. Sunday.....	Dec. 15
Colon.....	P. R. R. Saturday.....	Dec. 21
Advance.....	P. R. R. Thursday.....	Dec. 26
Panama.....	P. R. R. Thursday.....	Jan. 2
Allianca.....	P. R. R. Wednesday.....	Jan. 8
Colon.....	P. R. R. Wednesday.....	Jan. 15
Advance.....	P. R. R. Tuesday.....	Jan. 21
Panama.....	P. R. R. Tuesday.....	Jan. 28
Allianca.....	P. R. R. Sunday.....	Feb. 2
Colon.....	P. R. R. Sunday.....	Feb. 9
Advance.....	P. R. R. Saturday.....	Feb. 15
Panama.....	P. R. R. Saturday.....	Feb. 22
Allianca.....	P. R. R. Friday.....	Feb. 28
Colon.....	P. R. R. Saturday.....	Mar. 8
Advance.....	P. R. R. Wednesday.....	Mar. 12
Panama.....	P. R. R. Tuesday.....	Mar. 18
Allianca.....	P. R. R. Monday.....	Mar. 24
Colon.....	P. R. R. Sunday.....	Mar. 30
Advance.....	P. R. R. Monday.....	Apr. 7
Panama.....	P. R. R. Saturday.....	Apr. 12
Allianca.....	P. R. R. Friday.....	Apr. 18
Colon.....	P. R. R. Thursday.....	Apr. 24

NEW YORK TO COLON.

Prinz Sigismund.....	H.-A.....	Saturday.....	Dec. 7
Magdalena.....	R. M.....	Saturday.....	Dec. 7
Prinz Joachim.....	H.-A.....	Saturday.....	Dec. 14
Oruba.....	R. M.....	Saturday.....	Dec. 21
Prinz Eitel Friedrich.....	H.-A.....	Saturday.....	Dec. 21
Prinz August Wilhelm.....	H.-A.....	Saturday.....	Dec. 28
Prinz Sigismund.....	H.-A.....	Saturday.....	Jan. 4
Prinz Joachim.....	H.-A.....	Saturday.....	Jan. 11

COLON TO NEW YORK.

Santa Marta.....	U. F. C.....	Thursday.....	Dec. 12
Prinz August Wilhelm H.-A.....	Monday.....	Dec. 16	
Turrialba.....	U. F. C.....	Tuesday.....	Dec. 17
Prinz Sigismund.....	H.-A.....	Monday.....	Dec. 23
Arcadian.....	R. M.....	Tuesday.....	Dec. 24
Prinz Joachim.....	H.-A.....	Monday.....	Dec. 30
Prinz Eitel Friedrich.....	H.-A.....	Monday.....	Jan. 6
Prinz August Wilhelm H.-A.....	Monday.....	Jan. 13	

NEW ORLEANS TO COLON.

Cartago.....	U. F. C.....	Wednesday.....	Dec. 11
Parissima.....	U. F. C.....	Saturday.....	Dec. 14
Saramacca.....	U. F. C.....	Wednesday.....	Dec. 18
Abangarez.....	U. F. C.....	Saturday.....	Dec. 21
Heredia.....	U. F. C.....	Wednesday.....	Dec. 25
Atenas.....	U. F. C.....	Saturday.....	Dec. 28

COLON TO NEW ORLEANS.

Abangarez.....	U. F. C.....	Thursday.....	Dec. 12
Atenas.....	U. F. C.....	Thursday.....	Dec. 19
Cartago.....	U. F. C.....	Thursday.....	Dec. 19
Parissima.....	U. F. C.....	Thursday.....	Dec. 26
Saramacca.....	U. F. C.....	Thursday.....	Dec. 26
Abangarez.....	U. F. C.....	Thursday.....	Jan. 2
Heredia.....	U. F. C.....	Thursday.....	Jan. 2

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers for New York, via Kingston and Santiago de Cuba, sailing every Monday, leave alternately at 10 a. m. and 2 p. m.; the *Prinz Joachim* and the *Prinz August Wilhelm* at 2 p. m., and the *Prinz Sigismund* and the *Prinz Eitel Friedrich* at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, DECEMBER 18, 1912.

No. 17.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Balboa Power Plant.

The Balboa electrical power plant will be closed as a generating station on January 1, and the Balboa territory will be supplied from Miraflores. Twenty-five-cycle equipment will replace the 60-cycle now in use in the Ancon District. The cranes on the pier at Balboa and the overhead crane in Balboa shops will be run by power generated in the Balboa plant with a motor generator set made up of motors now on hand. Except for this, the Balboa plant will be used solely as a distributing center.

All power and light installations for alternating current will henceforth be for three-phase, 25-cycle current.

Floating Islands.

"Floating Islands" is the term used on the Canal to describe masses of vegetation and earth loosened from the bottom of Gatun Lake by the rising water, and blown about on the lake surface by changing winds. Virtually these islands are sections of the floor of the swamp that has been overrun by the water backed up in the Chagres Valley by the dam at Gatun.

An examination of one of them reveals the reason why it floats as a raft would. It is composed largely of sticks and leaves with a matting of clay or other soil, and upon this buoyant material lush grass has grown. The mass is at times so thick that a launch cannot make its way through it, although it would not prove any obstacle or inconvenience to a steamship, and would not be safe for a man to walk upon.

When the wind is blowing up the Chagres Valley, its common direction, the islands are driven against the trees that stand at the south side of the anchorage basin at Gatun, where they seem to be anchored. But now and then the wind dies down or changes direction, and the islands slip their moorings and drift out into the lake. One of the lock and dam builders tells of a sudden transformation that occurred a few weeks ago. At noon when the men were leaving their work for luncheon, the lake was blue, and

free from a speck of any kind, except as an occasional gust of wind tossed up a tiny white-cap here and there. An hour later when they were returning to work, the surface of the lake was dotted with small green islands. Such rapid shifting of the scene was due merely to a veer of the wind, for the islands are always ready to be caught up by wind or wave motion and floated into the lake.

An island about three acres in area is the largest that has so far appeared in the basin at Gatun. The large masses break up easily into smaller ones. But up the valley of the Trinidad there are hundreds of acres afloat. The swamp floor seems to have arisen to the lake surface, and rises and falls in rhythm with its motion.

During the past six weeks the launch *Balboa* has been at work towing islands to the Spillway where they float over the dam. Even after the sluice gates are installed there will be no trouble in floating them over the dam, for the aperture between piers on the dam crest is 45 feet.

Spillway Caisson.

Work of erecting the steel caisson for use in closing the weirs of the Spillway Dam at Gatun has been begun. The ways are being constructed on the south slope of Gatun Dam above the present water level. The caisson will be erected and allowed to remain on the ways until the water in the lake rises and floats it off. It will be 49 feet 6 inches long, 22 feet 6 inches high, and will contain about 53 tons of steel. A duplicate will be erected for use at Miraflores Spillway.

Photographers at the Fortifications.

The following general order of the Chief of Police under date of October 27, 1911, is repeated for the information of persons wishing to take photographs in the vicinity of the fortifications:

Pursuant to the instructions of the Chairman of the Isthmian Canal Commission, it is hereby ordered that photographers be excluded from the vicinity of the fortification work at Tojo Point, Marguerita Island, the islands in Panama Bay.

In execution of this order, no persons not regularly resident thereat will be permitted to come ashore at the places above named having cameras in their possession.

Employees residing at those places will be made aware of the provisions of this order and notified of the necessity of their complying therewith.

No exception will be made to this order unless by written authority of the Chairman in each particular case.

Seeing the Canal.

On January 6 the daily schedule for the "Seeing the Canal" train on the Panama railroad will go into effect. It will provide for a trip over the Pacific Division in the morning, and through Culebra Cut in the afternoon of Monday, Wednesday, and Friday. Upon the return from the Pacific Division trip in the morning a lecture, illustrated by the use of models, will be delivered at the tourist station in Ancon. The trip over the work at

Gatun will be on Tuesday, Thursday, and Saturday.

The models of the locks and dams, and the model of the Canal Zone, used in illustrating a lecture on the Canal, have been moved from Culebra and may be seen at the tourist station in Ancon, which is situated northwest of the Tivoli Hotel, near the railroad tracks. The building was formerly used as a storehouse, and in it a room 38 feet wide and about 45 feet long has been partitioned off, and benches for 175 people have been built up in tiers, amphitheatre style. In front of these benches the models are arranged in such a manner that they can be seen plainly from the farthest seats. Electric lights above the models, with reflectors that throw the light directly upon them, permit of their use at night. The lecturer is William M. Baxter, Jr., the official guide, who also conducts the sightseeing train.

The sightseeing business, which has reached large proportions and is expected to increase still further during the coming dry season, is a necessity of the situation. There is danger in allowing people to wander unguided about the locks, where the structural steel work is in progress and there is chance of falling; or on the dam at Gatun where trains are moving to and fro; or in the Culebra Cut where trains and dynamite blasts are a constant menace.

The sightseeing business has therefore been systematized and its conduct is now a regular part of the work. There is no better way to see the Canal than the trips of the sightseeing train, and none that requires so little time. In any two consecutive week days it is possible to see the entire work. The train moves slowly through Culebra Cut, and about the locks and Gatun Dam, while the guide explains in clear and authoritative manner all phases of the work, and answers all questions. In anticipation of a great increase in the number of tourists, a second observation car is being constructed at Gorgona Shops, and when this is in service, it will be possible to take 150 people over the work at one time. The official guide is training an assistant in order that there may be a guide on each car.

Stevedoring at Balboa Docks.

The contract for stevedoring at Balboa docks has been canceled at the request of the contractors, and on January 1 this work will be undertaken by the Quartermaster's Department.

Improvements on the "Allianca."

The Panama Railroad Steamship Line's *Allianca* has undergone alterations in New York within the past 2 months, by which the amount of deck space for the accommodation of passengers has been doubled. Hatches under awning, and an extension of the floor of the passenger deck toward the stern, afford ample space for deck chairs, while on

WORK AT PACIFIC ENTRANCE.

Many Classes of Work in Progress There.

Fortification and breakwater work, dredging, and the construction of terminal wharves are in progress at the Pacific entrance to the Canal. Ships from all ports of the west coast of the Americas lie in the present docks unloading or taking on cargo. The lie of the land north of the Gulf of Panama is such that ships on entering the roadstead must sail northward, no matter from what direction they come, and therefore every vessel that comes into the Pacific entrance passes in full sight of most of the work.

The mainland has been connected with Naos Island by the breakwater, the gap of 17,000 feet having been closed after many setbacks occasioned by the rock and earth slipping upon the silt bottom, and settling into the mud. Dumping of spoil from Culebra Cut continues, because the breakwater, although stable for its whole length, is not yet completed to its full width. Already, however, the currents that set from the west have been stopped, and the uncompleted mole is serving its purpose of minimizing silting in the Canal channel.

All the new cranes for the old steel pier are in position, and the new concrete wharf, the first of the new terminal quays to be constructed, has been diverted from its original service as a lumber unloading wharf, covered throughout, and is used for general cargo. Beyond it, towards the north, work is being pushed on the remainder of the terminal quay to be built at this time.

Little remains of the old village of Balboa. Steamshovels working on the site of part of it have dug out a location for the railway tracks and highway that will run along the east side of the dry dock between the dock and Sosa Hill. In the marine shops two steel barges used in the Atlantic entrance, and brought around South America to Balboa, are being converted into dump bottom barges for use in towing spoil from the dredges out to sea.

The dredging fleet is stretched along a distance of 2½ miles, from the end of the steel pier to the dike that separates the entrance work from that at Miraflores Locks. The old French ladder dredge *Mole*, in charge of the master who has been dredging in the Pacific entrance for 25 years, is scraping hard rock from the bottom of the Canal, 45 feet below mean tide. This dredge can work only between mean and low tide, because its ladder will not reach a greater depth than 45 feet. All the rock it removes must first be broken by blasting, and nearby the drill barge *Teredo* is at work making holes in the rock bottom for the charges of dynamite.

The rock breaker *Vulcan* does its work by

raising a 20-ton steel ram to a height of ten feet or more and letting it drop upon the rock. This hammering is repeated upon one spot until the ram reaches the desired depth of 45 feet below mean tide. Then the *Vulcan* is moved over another spot where its work is continued. A plan in the master's office on board shows the area covered from hour to hour. The rock is broken at intervals of 3 feet, and an area covered in this way needs no no further attention.

The dipper dredge *Cardenas* is at work in the channel opposite the new concrete wharf, about 5 miles inland from the entrance. It is digging rock and earth at a depth of 45 feet below mean tide. This dredge was purchased when the canal plan called for locks at Balboa, and no deep water excavation in rock was anticipated. It is therefore too light for effective work at such a great depth, and its output is not good, although sufficient to justify its retention in the service.

Four miles up the channel the old French dredge *Badger* is scraping rock and mud off the bottom of the Canal, the material having been previously blasted by dynamite. It works under the same handicaps as the *Mole*, not having been designed to dig at a greater depth than 30 feet below mean tide.

At the end of the channel, with its nose touching the dike that separates the entrance work from that at Miraflores Locks, the new ladder dredge *Corozal* is digging rock and earth that have not been blasted. It is working to a depth of 45 feet below mean tide, and compared with the remodeled French dredges, gives a good illustration of the greater effectiveness of modern excavating machines. It has been at work since last April in various parts of the channel. Its string of 52 buckets of 35 cubic feet capacity each has required no renewal, but all of them show the effects of hard service. It works in unblasted material, and digs out both rock and earth without ceasing although some of the rock ledges struck at the greatest depth make the engines work slowly, while the ship quivers with the effort. The lips of the buckets are of manganese steel, and yet these have been broken and worn by the hard material encountered here and there. Digging is carried on at all stages of the tide, 24 hours a day, six days a week. The output in heavy clay and blue sandstone, interspersed with ledges of hard rock, is about 150,000 cubic yards a month. This is the dredge that will complete the digging in Culebra Cut if the steamshovels now at work there do not finish it before the water is turned into the trench.

The seagoing suction dredge *Culebra* is also at work in the channel, cleaning mud from the rock, at the bottom of the Canal. The pipeline suction dredge recently brought from Gatun Dam and reerected at Balboa is pumping mud from the site of the new terminal docks and depositing it on the flats nearby.

EXECUTIVE ORDER

Lands in Canal Zone to be Taken for Canal Purposes.

By virtue of the authority vested in me by the Act of Congress entitled "An Act to provide for the opening, maintenance, protection, and operation of the Panama Canal, and the sanitation and government of the Canal Zone," approved August 24, 1912. I hereby declare that all land and land under water within the limits of the Canal Zone are necessary for the construction, maintenance, operation, protection, and sanitation of the Panama Canal, and the Chairman of the Isthmian Canal Commission is hereby directed to take possession, on behalf of the United States, of all such land and land under water; and he may extinguish, by agreement when practicable, all claims and titles of adverse claimants to the occupancy of said land and land under water.

WM. H. TAFT.

THE WHITE HOUSE,
December 5, 1912.

PERSONAL.

President Taft will leave Washington on December 19 for Key West, Fla., where he will go aboard the *U. S. S. Arkansas* and sail for the Isthmus. He is expected to arrive at Colon on December 24. He will be accompanied by Mrs. Taft, Miss Louise Taft, daughter of Charles P. Taft, Mr. Hilles, private secretary to the President, and Mrs. Hilles, and his naval and military aides. He will remain on the Isthmus till December 26 and is due to arrive in Washington on December 31.

Lieut.-Col. Wm. L. Sibert and family returned from the United States on the *Cristobal* on December 17.

Capt. Charles W. Barber sailed for New York on December 12.

Christmas Holiday in the Zone Schools.

The Canal Zone schools will close on Friday, December 20, for Christmas holidays and will reopen on Thursday, January 2, 1913.

Balboa Sand Service.

A report of sand cars loaded and shipped from Balboa during the month of November, follows:

DESTINATION.	Number cars.	Cubic yards.
Pacific Division.....	1,731	31,533
Atlantic Division.....	11	257
Central Division.....	31	465
Mechanical Division.....	1	15
Quartermaster's Department.....	2	50
Fortifications.....	*213	4,695
Panama railroad.....	13	325
Panama Tramways Company.....	11	239
Miscellaneous.....	5	125
Total.....	*2,018	37,700
*And one barge.		

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to October 31, 1912, follows:

PERIODS.	Department of Civil Administration.	Department of Law.	Department of Sanitation.	Department of Construction and Engineering	General Items.	Fortifications.	Total.
Total to June 30, 1909.....	3,427,090.29		9,673,539.28	69,622,561.42	78,022,606.10		160,745,797.09
Total—Fiscal Year, 1910.....	709,351.37		1,803,040.95	26,300,167.05	2,863,088.83		31,675,648.20
Total—Fiscal Year, 1911.....	755,079.44		1,717,792.62	27,477,776.19	3,097,959.72		33,048,607.97
Total—Fiscal Year, 1912.....	820,398.57	24,729.16	1,620,391.12	28,897,738.10	2,819,926.53	1,212,881.66	35,396,065.14
July, 1912.....	63,913.12	1,448.53	123,803.64	2,649,246.61	200,970.55	104,126.92	3,143,509.37
August, 1912.....	62,182.51	1,468.26	121,151.48	2,539,680.83	*98,454.61	111,402.55	2,739,834.02
September, 1912.....	59,201.01	1,207.82	120,385.70	2,285,979.89	77,003.53	127,168.25	2,670,946.20
October, 1912.....	64,383.37	2,033.75	130,541.61	2,773,280.76	83,523.30	129,736.37	2,890,532.16
Grand total.....	5,961,599.68	30,887.52	15,319,682.4	46,430.85	87,067,023.95	1,685,315.75	172,310,940.15

*Denotes Credit.

DREDGE DIPPER TRIPS.

Devices Installed under Direction of Atlantic Division Craneman.

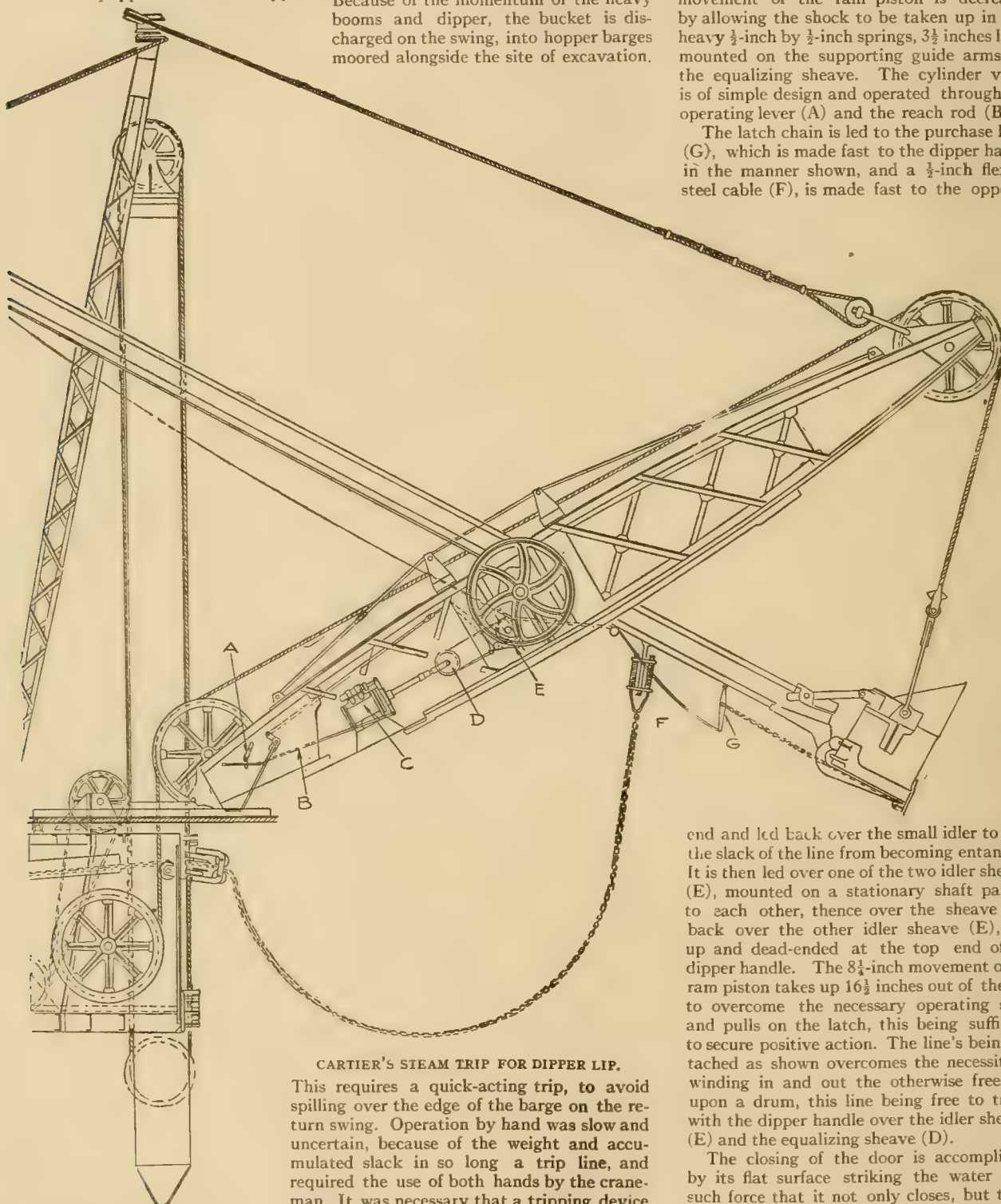
The dipper dredges *Mindi* and *Chagres*, operating in the Atlantic entrance channel and in coral rock excavation for the new piers of the Panama Railroad Company at Cristobal, have been equipped with steam dipper

pers, are used entirely in rock, which when necessary, has been partly broken up by the operations of the drillboat *Terrier*. They are cutting channels of a minimum depth of 42 feet at mean tide, and this requires dipper handles of the great length of 62 feet, while the boom supporting the shipper shaft is 50 feet long. Because of the momentum of the heavy booms and dipper, the bucket is discharged on the swing, into hopper barges moored alongside the site of excavation.

out-of-the-way position on the interior of the boom. The steam exhausted from the operation of the ram is discharged below the surface of the water, in order that it may not obstruct the operator's view.

The cylinder is 5-inch bore and has a stroke of $8\frac{1}{4}$ inches. The piston rod carries the equalizing sheave, (D), and the jamb movement of the ram piston is decreased by allowing the shock to be taken up in two heavy $\frac{1}{2}$ -inch by $\frac{1}{2}$ -inch springs, $3\frac{1}{2}$ inches long, mounted on the supporting guide arms for the equalizing sheave. The cylinder valve is of simple design and operated through the operating lever (A) and the reach rod (B).

The latch chain is led to the purchase lever (G), which is made fast to the dipper handle in the manner shown, and a $\frac{1}{2}$ -inch flexible steel cable (F), is made fast to the opposite



CARTIER'S STEAM TRIP FOR DIPPER LIP.

This requires a quick-acting trip, to avoid spilling over the edge of the barge on the return swing. Operation by hand was slow and uncertain, because of the weight and accumulated slack in so long a trip line, and required the use of both hands by the crane-man. It was necessary that a tripping device be both positive in action and simple in construction, because of the arrangement of boom and dipper stick. The device had to be so arranged that the tripping line would not have to be overhauled, on a drum or otherwise. It will be seen by the accompanying sketch that the Cartier device consists of a steam ram (C), mounted on a foundation in an

end and led back over the small idler to keep the slack of the line from becoming entangled. It is then led over one of the two idler sheaves (E), mounted on a stationary shaft parallel to each other, thence over the sheave (D), back over the other idler sheave (E), and up and dead-ended at the top end of the dipper handle. The $8\frac{1}{4}$ -inch movement of the ram piston takes up $16\frac{1}{2}$ inches out of the line to overcome the necessary operating slack and pulls on the latch, this being sufficient to secure positive action. The line's being attached as shown overcomes the necessity of winding in and out the otherwise free end upon a drum, this line being free to travel with the dipper handle over the idler sheaves (E) and the equalizing sheave (D).

The closing of the door is accomplished by its flat surface striking the water with such force that it not only closes, but takes up the slack in the tripping line (F) and pulls the piston to a starting position in the ram.

The saving in time and the increase in yardage through use of this device cannot be arrived at, as no efficiency tests have been made. It is known, however, that a considerable increase in the yardage has been achieved.

trips which a test of six months shows to be successful. The trips were installed by the dredge crews, under the direction of one of the crane-men, Mr. Henry Cartier, who selected the material mostly out of scrapped French machinery.

The dredges, mounting 5-yard dip-

CHRISTMAS IN THE CANAL ZONE

Church Services and Community Celebrations.

The Christmas celebration in the Cristobal Union Church will be held on Sunday, December 22. The Sunday school exercises are to be in the morning at 10 o'clock, when a program will be given in which the pupils of the school will take part. At 7.45 p. m. the Christmas service will be held, the Rev. Carl H. Elliott preaching. Special music will be rendered by a double quartette.

On Christmas Eve, the community celebration will be held in the Commission clubhouse. The program has been divided into three parts as follows: Part 1, for children in the auditorium from 7 to 8.30 p. m.; part 2, for men, in the auditorium from 9 to 11 o'clock; part 3 will be for women in the game room from 9 to 10.30 o'clock. This celebration has been arranged by a committee of men and women representing the following organizations: The Cristobal Woman's Club, the Young Men's Christian Association, the Union Church and Sunday school, St. Joseph's Church, Colon, and the fraternal societies in Cristobal.

At Christ Church, Colon Beach, there will be a Eucharistic service at midnight, on Christmas Eve, and additional services at 5.30 and 7.30 a. m., on December 25. The Sunday school celebration will be held in the school room on Monday evening, December 30. Gifts for 100 children have been purchased by the Women's Altar Society of the church.

The Baptist mission at Colon will celebrate Christmas with a service in the hall on Monday evening, December 23.

The Gatun Sunday school celebration will be held in the Commission chapel on Christmas Eve. A "surprise" feature is promised in addition to the Christmas program, a tree and a visit of Santa Claus with gifts for the children present.

On December 26, the Baptist mission at New Gatun will hold a children's entertainment. Mrs. Stephen Witt, the wife of the pastor of the mission, has been assisted by American women in Gatun in the preparation of the program.

At Gorgona, the Sunday school celebration will be in the Commission chapel on Christmas Eve. A Christmas tree will be provided and gifts given to each child attending. Members and the Sunday school and others who wish to do so may place gifts for their friends on this tree. The program will consist of Christmas carols and recitations and is in charge of a committee composed of Mrs. March, Mrs. Gamble, Mrs. Hackenberg, and Mrs. Johnson. The Christmas service in the Gorgona church will be held on December 29 at 11 a. m., and the Rev. J. L. Wise will be the preacher.

The Las Cascadas Sunday school will hold its Christmas celebration in the Commission chapel on December 24.

At St. Mary's Church, Empire, there will be a service on Christmas day at 10.45 a. m. The Knights Templar will attend in a body.

The community celebration in Empire will be held at the Commission clubhouse on Christmas Eve. There will be a tree with gifts for each child present. The Sunday school of the Union church will hold no separate celebration.

At St. Ferdinand's Church, Empire, there will be midnight mass on Christmas Eve,

mass at 7 and high mass at 9 a. m. Solemn vespers will be sung at 7.30 p. m. On Christmas Eve there will be a concert and Christmas treat for the colored members of the church and parish house.

The Culebra Sunday school is celebrating its seventh Christmas on December 24. The entertainment will be held in the Sunday school room in the school building. The exercises will consist of a program by pupils of the school, closing with a Christmas play. Mrs. A. B. Dickson is in charge of the program. The school will distribute a souvenir booklet in honor of the occasion. The Christmas services will be held in the chapel on Sunday evening, December 22, at 7.20 o'clock. Chaplain A. A. Nellis will preach.

At the Church of the Holy Redeemer the Midnight Mass will be celebrated, and the second Mass in the morning at 8.30 a. m.

There will be preaching service on Christmas evening in the Commission chapel at Paraiso.

The community celebration at Pedro Miguel will be held in the social hall on Christmas Eve. The children of the Sunday school will take part in a Christmas play.

The Sunday school celebration at Corozal will be held in the Commission clubhouse on Christmas Eve. Forty pupils of the school will take part in a program consisting of songs, recitations, and fancy drills. There will be a tree and gifts.

An elaborate entertainment will be given by the Sunday school of the Methodist Church on the sea-wall, Panama. The program will be by the pupils of the school, the Spanish children as well as the American children participating. The opening number is the Christmas hymn, "O Santissimo," sung by the school in Spanish and the program will close with a dialogue in Spanish by nine children. There will be a Christmas tree and gifts. The pastor of the church is trying to arrange to have the prisoners of the Chiriqui Prison brought to the church on Christmas day when the program will be repeated for their benefit. In case this should not be permitted, the program will be given in the prison yard. The church has prepared gifts of candy for the prisoners.

At St. Paul's Church, Panama there will be a celebration of the Holy Communion on Christmas morning at 5.30 o'clock. The parish of St. Paul's will hold a Christmas bazaar in Ancon baseball park on Monday afternoon, December 23.

There will be a Christmas tree in Ancon hall on Christmas Eve, December 24, for all Catholic children living in Ancon and East Balboa.

There will be services at St. Luke's Hospital chapel, Ancon, on Christmas day at 10 o'clock.

The East Balboa Sunday School will have a Christmas meeting on Christmas day at 2 p. m. in the East Balboa Hotel.

Church Notes.

The offering at St. Paul's Church, Panama, on Sunday, December 22, will be devoted to charitable purposes. A part of the sum received in the day's offering will be donated to the mission of St. Michael, at Pedro Miguel and the remainder will be forwarded for the relief of the sufferers in the West Indian storm district.

The Rev. Charles W. Ports, for several years a missionary in charge of the Spanish

section of the Methodist Episcopal Church, Panama, will leave his present work to take up work in connection with the educational department of the church mission in Chili or Bolivia. The Methodist mission will send a new man to take his place on the Isthmus. Owing to the press of work in Bolivia in connection with the establishing of a girls' school by the Methodist mission, the first visit to the Panama mission of the new bishop, the Rev. Homer Stuntz, will not take place the end of this month as had been expected, but will be deferred until April, 1913.

Episcopal Churches.

The next meeting of the Women's Altar Guild of St. Luke's Church, Ancon, will be held at the home of Chaplain and Mrs. Henry A. Brown, on January 14, and will consist of a business session at 3 o'clock and a reception to Bishop Knight of Cuba from 4 to 5 o'clock. The Guild will make its usual Christmas gifts in Ancon Hospital.

On December 3 there was an election of officers in the Altar Society of Christ Church, Colon. The following were chosen for the year: Mrs. P. T. Murphy, president; Mrs. R. W. Bergin, secretary; and Mrs. W. H. Fenley, treasurer. The society hopes to have the new altar ready on Easter Sunday, and a new organ, the order for which has been placed with an English firm, will also be ready by Easter.

Reading Matter for Hospital.

There is a constant need of old weekly and monthly periodicals in Colon Hospital and the jails. Any resident of Cristobal or Colon having literature to give may have it taken by messenger upon dropping postal to Chaplain Carl H. Elliott, Cristobal, C. Z.

Public Playgrounds.

The Colon Public Playground, now situated behind the Washington Hotel building, will be abandoned for a new site on land belonging to the Panama Railroad Company near the new fill on E street. The removal of the equipment will take place as soon as the municipality can secure a labor force to prepare the ground. This playground, which was the first to be opened on the Isthmus, was presented to the city of Colon in August, 1909, by the educational department of the Cristobal Women's Club. The equipment, which was selected from photographs submitted by the National Playground Association of New York, consists of a shelter 12 by 40 feet, 6 swings, 2 ladders, 2 horizontal bars, 1 spring board, 1 May pole, and 2 sand gardens. In 1910, a similar playground was opened at Gatun for the American children of the village; the Cristobal Woman's Club placed equipment at Colon Beach, and at the point at Cristobal, and a playground was established in the school grounds at Empire.

United Spanish War Veterans.

Chagres Camp No. 1, U. S. W., V. will hold its regular meeting in the I. C. C. lodge hall at Gorgona, on Saturday evening, December 21, at 7.45 p. m. Refreshments will be served, and an election of officers will be held.

Tungsten Lamps for Sale.

The commissary stores have placed on sale 40-watt tungsten lamps, of voltage adapted to the lighting circuits of the Canal Zone villages. These lamps may be bought by those entitled to the commissary privilege, upon application to storekeepers, for 23½ cents each; frosted globes, for 25½ cents each.

CARE OF THE INCAPACITATED.

Report of Committee on the Administration of the Corozal Farm.

Following is the report of a committee, consisting of Lieut.-Col. Chas. F. Mason, chairman, Mr. H. A. A. Smith and Mr. C. A. McIlvaine, appointed by the Chairman to consider the administration of the Corozal Farm, a refuge for laborers who become chronically ill, insane or disabled in the employ of the Isthmian Canal Commission and the Panama railroad:

CULEBRA, C. Z., December 11, 1912.

COL. GEO. W. GOETHALS, *Chairman*
Culebra, C. Z.

SIR:

1. The committee appointed by your letter of November 29 respectfully submits the following report and recommendations relative to the administration of the Corozal Farm:

2. The committee met at the office of the Superintendent of Ancon Hospital, Tuesday morning, December 10, Mr. H. A. A. Smith, Examiner of Accounts representing his department. The matters discussed were as follows:

FUNDS.

3. The farm will in large part consist of institutions now forming a part of the Department of Sanitation, such as the Insane Asylum, the dairy, the piggery, the henry, and the cemetery. To these will be added certain features to make the farm self-supporting, if possible. The matter of caring for disabled employees was brought to the attention of the Appropriation Committee in 1910 (see page 196, Hearings Concerning Estimates for Construction of the Isthmian Canal for Fiscal Year 1912), as a result of which Item 12 of the Appropriation Acts for the Fiscal Years 1912 and 1913 contains a provision for the care of disabled employees under the appropriations for the Department of Sanitation.

4. This being the Congressional authority for the care of these men, and the farm being the means for using the funds most economically and humanely, it follows that the funds of the Department of Sanitation should be used for carrying out the plan. It is the opinion of the Committee that proper steps should be taken to credit to the farm and make available for its use such funds as amounts realized from sale of farm products, paid patients in the insane asylum and services performed on the farm or in its shops, etc., for other parts of the Canal work, and we so recommend.

CONDITIONS OF EMPLOYMENT.

5. The conditions of employment will probably have to be worked out by actual trial but, for initial purposes, the following general rules are recommended:

1. The rates of pay for hourly men will be 3, 5, 7 and 10 cents gold per hour, and for monthly men (foremen, clerks, etc.) \$15, \$20 and \$25 gold per month.

2. Ten hours will constitute a day's labor.

3. The 3, 5, and 7-cent rates will be paid to colored labor and the 5, 7 and 10-cent rates to European labor.

4. Employees will be furnished bachelor quarters, subsistence similar to that now furnished at I. C. C. kitchens and messes, necessary laundry work and plain work clothes.

5. All laborers must work at least two weeks at the lowest rate—3-cent and 5-cent for colored and European laborers respectively—and until they show that they can earn a higher rate, before receiving higher pay.

6. Men having families dependent on them and who wish to live at home will be allowed commutation of subsistence in the form of an increase of pay of 3 cents per hour for hourly men and 30 cents per day for monthly men for such time as service is actually rendered.

7. Employees of the farm may purchase products of the farm for use of themselves and families at wholesale market prices.

8. Married quarters, when available, will be furnished in cases found, after investigation by the Farm Advisory Board, to be most deserving.

9. Leave of absence without pay for any length of time may be granted by the Superintendent of the Farm.

10. Employees will be free to come and go as they please outside of regular working hours.

11. Employees will be subject to the orders of the Superintendent. They must perform the tasks allotted to them and, on failure to do so, will be subject to discipline or reduction of pay. When in the opinion of the Advisory Board such action becomes necessary, employees will be deported to their native countries and will thereafter not be

entitled to further assistance by the Government in any form.

12. Only men permanently disabled while employed by the Commission or the Panama Railroad Company or in service connected with the construction of the Canal will be employed, except such supervisory force as may be necessary.

13. To receive employment, application must be made to the Chairman of the Commission on a form to be provided for that purpose. When the application is approved, the applicant will be given employment.

DUTIES OF THE SUPERINTENDENT.

6. It is recommended that the duties of the Superintendent be tentatively outlined as follows, subject, of course, to modification as the need becomes apparent:

1. He will plan the work and general layout of the farm, subject to the approval of the Chief Sanitary Officer and the Chairman.

2. He will superintend the execution of all farm projects and the sale of products.

3. The government and assignment to duty of all employees, under such rules as may be approved by the Chairman, will be in his hands.

4. The physician in charge of the insane will also look after the health of the farm employees and will cooperate with the Superintendent in the administration of the farm, should any question of jurisdiction arise.

5. The Superintendent will grade and classify the laborers according to their various classes of employment and earning power.

OFFICE FORCE.

7. There will be a considerable amount of accounting and timekeeping and some correspondence, reports, etc., in the administration of the farm, and it is recommended that one gold clerk at \$125 per month be employed to take charge of the office, and that he recruit his force of assistants from the disabled force.

ACCOUNTING.

8. It is recommended that the Examiner of Accounts prepare a system of accounts for the farm work and that Mr. Faure outline a cost-keeping system.

ACTIVITIES.

9. The subject has been reported on in a general way by a previous committee. It is the opinion of the Committee that, as soon as the development of the work warrants, such adjuncts to the work as mess kitchens, animal transportation, corrals, carpenter shops, etc., should be a part of the farm work and in charge of the Superintendent.

10. Until that time, subsistence should be furnished by the Subsistence Department and corral service by the Quartermaster's Department.

11. The subject of flower raising was mentioned and the Committee, believing there is a ready market for cut flowers, recommends that this project be included in the farm plans.

12. The feasibility of operating shops similar to Quartermaster's Department carpenter shops, mattress factory, etc., to perform work for other departments, was also discussed and it appears to the committee that this is entirely practicable.

COROZAL FARM BOARD.

13. Mr. Smith suggested that a permanent board, to act in an advisory and consultative capacity, might often expedite the solution of farm problems and in other ways be of considerable help. The Committee recommends the adoption of the suggestion and that the board consist of three members, one from the Department of Sanitation, one from the Department of Examination of Accounts and one from the Chairman's Office.

Respectfully,

(Signed) CHAS. F. MASON, *Chairman*,
Superintendent of Ancon Hospital.

(Signed) H. A. A. SMITH,
Examiner of Accounts.

(Signed) C. A. McILVAINE,
Chief Clerk, Chairman's Office.

Married.

WARD-HARDEN—On Sunday evening, December 8, in St. Luke's Chapel, Ancon, Miss Mildred Arvilla Harden of South Weymouth, Mass., to Mr. William Henry Ward, Jr., of Washington, D. C., the Rev. H. R. Carson officiating. Canal Zone residence, Empire.

BOGGS-DAVIS—On Thursday, December 11, in the Union Church, Cristobal, Miss Mary Ella Davis of Marquez, Texas, to Mr. Julian Carson Boggs of Palestine, Texas, the Rev. Carl H. Elliott officiating. Canal Zone residence, Las Cascadas.

LOST—In Gatun on December 12, badge pin of Daughters of the American Revolution with the name of the owner on the back. Finder will please return to Box 177, Ancon, and receive reward.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The final standing of the basketball tournament is as follows:

	Won	Lost	P. C.
Empire.....	7	1	.875
Corozal.....	5	3	.625
Gatun.....	5	3	.625
Gorgona.....	2	6	.250
Cristobal.....	1	7	.125

The final standing of the teams in the bowling tournament is as follows:

	Won	Lost	P. C.
Empire.....	20	10	.667
Gatun.....	18	12	.600
Culebra.....	17	13	.567
Cristobal.....	17	13	.567
Corozal.....	11	19	.367
Gorgona.....	7	23	.233

Moving picture dates for the week, December 16 to 21, are as follows: Monday, Gatun; Tuesday, Cristobal; Wednesday, Gorgona; Thursday, Corozal; Friday, Empire; Saturday, Culebra.

Moving pictures will be shown at Porto Bello on Friday, December 20.

COROZAL.

The last basketball game in the league tournament was played on the Corozal floor Saturday, December 14, with the following results:

	Points	Fouls
Cristobal.....	13	2
Corozal.....	31	5

The third number of the Forum was presented last Sunday night. The music was furnished by the Y. M. C. A. mixed chorus from Gorgona; Mr. S. P. Verner delivered an address on "The Man Who Came Back". One hundred and twenty-five people were present.

Miss MacLaren will appear in Corozal on December 25, in "The Governor's Lady."

CULEBRA.

The second entertainment in the Forum series was held on Friday night, December 13. The instrumental trio, Messrs. Ramsey, Arbuckle and Howard, furnished music during the evening. Mr. Whitehead played two violin solos and Miss Lynch sang a solo. An address on "Natural Law in the World of Labor" was given by Mr. W. B. Childers.

On Saturday night, the Gorgona bowling team lost three games to the local bowlers with the following scores:

	Gorgona	Culebra
Davis.....	144 123 165	Case..... 149 154 149
Calloway.....	142 114 136	Hosetter..... 142 142 169
Dunst.....	153 130 134	Harrington..... 137 145 150
Shires.....	119 157 146	Anderson..... 144 154 148
Sims.....	166 158 155	Dougherty..... 159 202 186
	724 682 155	731 797 802

A new counter has been constructed in the pool room and ice cream and soft drinks may be purchased. A cigar stand will be installed at an early date.

EMPIRE.

The last game of basketball in the Isthmian League was played on Saturday, December 15, with the Gatun team, which won by a score of 21 to 16. This is the only game that was lost during the entire season by the Empire team. The members of the Empire team are Greening, captain; Rowan, Sawyer, Cushing, Miller, Adams, and King.

Thirty men have entered the rag-time duckpin tournament that started during the past week. An all-star bowling team will play the Empire tenpin bowling team on Saturday, December 21.

Much interest is now taken in volley ball. Two Culebra teams played an exhibition game at Empire on December 17. Match games will be arranged between the Empire and Culebra teams.

The third number of the Y. M. C. A. Forum will be given Sunday evening. The speaker will be Mr. Childers of Gatun. Music will be furnished by the Gorgona Y. M. C. A. chorus. All are invited to attend.

The Christmas entertainment to be given in the clubhouse on Christmas Eve for the children of Empire will consist of a program given by the children, about 25 of whom will take part in a play that has been prepared for them. There will be a Christmas tree with a gift for each child in Empire.

GORGONA.

Three hundred people attended the motion picture show on Saturday evening. The next show will be given on Wednesday evening.

The chorus furnished special music for the Corozal Y. M. C. A. on Sunday evening, and will sing at Empire on Sunday evening, December 22, 1912. They are preparing for Christmas and a special entertainment.

A wrestling tournament has been planned, and will begin in January. All contestants desiring to get in

shape should come out on Monday, Wednesday and Fridays. All desiring to get in shape for a handball tournament are requested to come out and practice.

A special Christmas entertainment is being planned, for December 25, 1912. The first part of the program is for the children, from 7 to 8.15 o'clock; following this, the second part will be for the big folks. The program consists of songs, orchestra and music, three small plays, and recitations. A smoker is being planned for New Year's.

The standing in the local bowling tournament is as follows:

Name.	Won.	Lost.	P. C.
Roper.....	13	0	1.000
Sims.....	11	4	.733
Powell.....	11	5	.722
Calloway.....	8	4	.667
Keppler.....	2	1	.667

High scores for the week: Powell, 221; Roper, 202; Trieber, 209. *Duckpins*—Davis, 108.

GATUN.

A campaign for "500 Members by January 1st" has been inaugurated and the cooperation of the members is solicited.

Khaki basketball pants have been added to the salable merchandise list.

The First Aid to the Injured Class will hold its initial meeting on Thursday evening, December 19. Any members may join.

Miss Gay Zenola MacLaren gave an imitative recital on Wednesday evening, December 18.

Eighteen men were enrolled at the first session of the "Beginners Spanish Class" which meets on Wednesday and Friday evenings. The total number now studying Spanish at the Gatun clubhouse is forty-two.

The Lock City Pocket Billiard Tournament closed on Friday evening, December 13. C. C. Bailey received first prize; H. E. Dewey, second prize, and W. H. Cheeks, third prize. The prizes consist of gold, silver and bronze medals.

Five new chest-weight machines have been added to the gymnasium equipment.

Martinoff, Loulan and Straub still lead respectively in the senior athletic contest. Jervey, Meise and Cummings have the largest number of points so far in the boys' athletic contest.

The married men defeated the bachelors in a game of volley ball on Friday, December 13.

CRISTOBAL.

On Thursday, December 12, the first session of the Forum was held at the Cristobal clubhouse. There was an attendance of 125. Prof. F. A. Gause delivered a talk on "Literature and Life," and there was music by Messrs. Ramsey, Arbuckle and Howard.

The ragtime tournament was opened on Friday, December 13, with 25 entries. Each bowler is to bowl ten games.

A moving picture exhibition will be held at the clubhouse on December 23; special reels will be shown to the children of the Cristobal Sunday school on the afternoon of this date.

A community Christmas celebration will be held at the clubhouse on Tuesday, December 24. All the residents of Cristobal and Colon Beach are invited. A program for the children with proper presentation of gifts will be held in the hall from 7 to 8.30 p. m. A program for the men will be held in the same place from 9 to 11. Elaborate refreshments will be served and numbers will be contributed by Miss Gay Zenola MacLaren and the Mosher brothers. A program for ladies will be given in the game room at 9 o'clock. Refreshments will be served.

OCCUPANTS OF CANAL QUARTERS.

The occupants of Commission quarters on November 30, 1912, were as follows:

PLACE.	Gold.			Europeans.			West Indians.		
	Men	Women	Children	Men	Women	Children	Men	Women	Children
Balboa.....	226	33	37	364	.....	.....	409	.....	.....
Ancon.....	488	307	210	333	.....	.....	907	5	1
Corozal.....	533	87	88	303	.....	.....	382	5	5
Miraflores.....	19	2	1	599	3	10	192	5	3
Pedro Miguel.....	298	77	77	335	4	3	317	35	40
Paraiso.....	282	73	77	210	3	11	217	112	138
Culebra.....	332	174	173	417	46	83	350	132	175
Empire.....	494	307	286	418	56	72	469	135	197
Las Cascadas.....	164	94	89	38	17	28	244	152	120
Bas Obispo.....	72	47	41	141	29	40	160	66	72
Gorgona.....	744	237	280	74	5	5	282	92	166
Gatun.....	949	211	198	1,368	27	46	1,015	24	35
Cristobal.....	865	277	283	128	.....	.....	1,305	213	351
Toro Point.....	61	15	27	60	.....	.....	333	.....	.....
Porto Bello.....	63	24	15	106	.....	.....	222	2	2
Total.....	5,590	1,965	1,832	4,594	190	298	6,804	978	1,305

(1) Includes Sabanas police station, Taboga Island, Culebra Island, Palo Seco, and Naos Island. (2) Includes Europeans and Asiatics. (3) Includes 66 Panamanians. (4) Includes 52 East Indians. (5) Includes 71 Panamanians. (6) Includes Matachin. (7) Includes Colon Hospital. (8) Includes four Asiatics. Included in the above also, are 42 families, and 416 bachelors, belonging to the gold force of contractors.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon during the two weeks ending December 14:

Carrillo, December 1, from New York, with 25 cases babbitt metal, 12 cases hardware, for stock; 60 cases gate valves, 30 cases electrical machinery, 18 cases pipe and elbows, 7 cases gate machinery, for Superintendent of Erection.

Prinz Eitel Friedrich, December 3, from New York, with 48 bundles coiled springs, for stock.

Panama, December 2, from New York, with 20 cases drugs and sundries, 52 barrels alcohol, 24 cases Sherry wine, for Sanitary Department; 24 reels copper wire, for Superintendent of Erection; 60 locomotive tires, for Mechanical Division; 603 cases tile slabs for Panama Railroad Company; 440 reels wire, 884 bundles black pipe, 235 pieces switches and fittings, 34 cases wrapping paper, 68 cases caustic soda, 250 bundles brooms, 50 cases sal soda, 40 cases picks, 13 cases asbestos covering, for stock; and a miscellaneous cargo, the whole consisting of 3,075 packages, weighing 300 tons.

Lillie No. 5, December 4, from Mobile, with 6,745 pieces cross ties, for stock.

Santa Maria, December 4, from New York, with 40 bundles steel bars, 120 coils rope for stock; 1,478 bundles steel bars, for Fortifications; 201 cases electrical material, 40 crates varnish, 13 crates compound, 13 crates castings, for Superintendent of Erection.

Abangares, December 5, from New Orleans, with 312 bales straw, 1,470 bales hay, 511 sacks dairy feed, 100 cases soap, 1,628 pieces sewer pipe, 245 pieces piling, 977 pieces lumber, 560 drums oils, for stock; 5,205 pieces lumber, 12 cases lamps, for Mechanical Division; 102 barrels paving brick, for Panama Railroad Company.

Manx Isles, December 6, from Baltimore, with 387 crates rack castings, 303 cases gate machinery, 611 cases lock machinery, 22 cases valve machinery, 442 packages structural steel, for Superintendent of Erection; 1,426 bundles steel bars, for Atlantic Division; 187 bundles steel bars, for Pacific Division; 592 bundles steel bars, for Fortifications; 350 tons coke, 46 tons pig iron, for Mechanical Division; 533 pieces steel plates, 27 pieces angles and beams, for stock; 8 bales pillows, for Panama Railroad Company.

Ancon, December 8, from New York, with 22 cases electrical material, 33 cases varnish, for Superintendent of Erection; 400 pieces brake beams, for Mechanical Division; 17 cases rubber boots, for Pacific Division; 87 packages sashes and doors, for Panama Railroad Company; 120,870 bags cement, for Atlantic and Pacific Divisions; 10 cases paint, 250 pieces wrought pipe, 46 cases toe calks, 28 drums lubricating oil, 10 cases horse shoes, for stock.

Turrialba, December 8, from New York, with 13 reels hoisting cable, 20 cases babbitt metal, 10 cases paint, 16 cases tape fuse, 30 cases wire, for stock; 26 packages electrical material, for Panama Railroad Company; 38 pieces pump parts, for Superintendent of Erection.

La Plata, December 8, from Antwerp, with 16 cases valve machinery parts, for Superintendent of Erection.

Allianca, December 9, from New York, with 86 cases incandescent lamps, 10 cases brake shoes, 100 cases castings, for Mechanical Division; 25 cases drugs and sundries, for Sanitary Department; 12 barrels iron washers, 19 cases tackle blocks, 14 crates enamel ware, 150 pieces steel angles, 15 cases paper tablets, for stock; and a miscellaneous cargo, the whole consisting of 579 packages, weighing 120 tons.

OFFICIAL CIRCULARS.

Reorganization in Department of Construction and Engineering.

CULEBRA, C. Z., December 12, 1912.

CIRCULAR No. 183-S:

Effective at the close of business this date the following changes are made in the organization of the Department of Construction and Engineering:

The Pacific Division is abolished. Mr. S. B. Williamson, Division Engineer, and Mr. J. M. G. Watt, Assistant Division Engineer, having resigned, the positions are abolished.

The work heretofore assigned to the Pacific Division will hereafter be in charge of the Chief Engineer, under the following officers who will report direct to him:

1. Mr. H. H. Rousseau, Assistant to the Chief Engineer, in charge of the Second Division, will supervise the work on the Pacific terminal facilities, including the construction of shops, dry dock, coaling station and docks.

2. Mr. H. O. Cole, Resident Engineer, will be in charge of the construction of Miraflores and Pedro Miguel locks, dams and spillway, dry excavation of the Canal prism south of Pedro Miguel, municipal work in that territory, Ancon quarry and transportation. This division will be known as the Fifth Division, Chief Engineer's Office.

3. Mr. W. G. Comber, Resident Engineer, will be in charge of dredging operations, Balboa Shops, and the sand service. This division will be known as the Sixth Division, Chief Engineer's Office.

The timekeeping work will remain as at present and until it is transferred to the Examiner of Accounts.

The costkeeping work will be transferred to this office to be under the direction of the Chief Cost Accountant who will furnish the Resident Engineers and other officials the data which the costkeeping force of the Pacific Division has been furnishing to the various officials daily, to enable them to keep track of the cost of their work.

These are administrative changes only. The work to be performed will go forward with the same personnel and with about the same organization except for the division of work above ordered.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Carbon Copy of Correspondence.

CULEBRA, C. Z., December 16, 1912.

CIRCULAR No. 467:

When forwarding any typewritten communication, if there is reason to assume that the information contained therein is to be transmitted by the official receiving it to some other department or official, a carbon copy should be forwarded with the original.

GEO. W. GOETHALS, Chairman.

Christmas and New Year's Days.

CULEBRA, C. Z., December 14, 1912.

CIRCULAR No. 466:

Christmas Day, December 25, 1912, and New Year's Day, January 1, 1913, will be observed as holidays in the Canal Zone, and, as far as practicable, all public business will be suspended on those days.

GEO. W. GOETHALS, Chairman.

Classified Expenditure Accounts.

EMPIRE, C. Z., December 2, 1912.

CIRCULAR No. 37:

The following new account in the classified expenditures of the Isthmian Canal Commission has been authorized:

PERMANENT BUILDINGS.

Account 361—To this account will be charged all expenses incurred in the construction of permanent buildings for canal operation. This account will include all expenditures for permanent building construction without regard to existing departments and divisions. Detailed subaccounts shall be maintained to show cost of construction of each building or class of buildings, for use in such future distribution as may be determined.

H. A. A. SMITH,
Examiner of Accounts.

Approved:
GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Chief of Police.

ANCON, December 12, 1912.

CIRCULAR No. 110:

To Heads of Departments and Divisions: Effective today, Mr. A. G. Belknap will act as Chief of Police and Prisons during the absence of Capt. Chas. W. Barber, U. S. A., on leave.

M. H. THATCHER,
Head of Department of Civil Administration.

LOST—In Panama or Ancon on Saturday, November 7, pay envelope containing \$35 in bills. Owner's name on envelope together with the notation "\$35.00." Finder will please return to the Ancon police station and receive suitable reward.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

No material changes have been made in the prices of cold storage commodities sold at the Commissary stores since the last publication of the price list.

Misdirected Letters

ANCON, C. Z., December 18, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts and may be secured upon request of the addressees:

Atkin, John	Luttrell, J. T.
Barkley, J. M.	Major, Mrs. Eva
Barnes, George	Martin, Mrs. J. N. (2)
Betham, Thomas	McCray, H. A.
Bolen, H. E.	Mettke, E.
Bónila, J. M.	Morris, Mrs. Marget
Bonilla, Pablo	Needham, Dr. L. K.
Carrol, Robt.	Norton, Francis J. C.
Compton, Raoy A.	Patterson, Miss B. Mae
Compton, Rolla	Plummer, Harry
De Laureza, Emma	Rolden, Antonio R.
De Long, C. C.	Ross, James A.
DuBose, McNeely	Ross, N. L.
Ferguson, John L.	Scheltzer, Mrs. Frances
Fleckstein, Jno. L.	Secley, N. S.
Fox, Alvin	Snapp, B. M.
Frederick, Alphas	Stanly, Mrs. Mary S. P.
Knight, Miss Elsie M.	Sunderland, John
Lehr, Mickell P.	Thomas, O. J.
Lewis, Miss Mary	White, Frank A.
Lovell, Joseph	Wright, Walter J., Jr.

Family Quarters

Applications for family quarters on file November 30, were as follows:

DISTRICT.	List No. 1.	List No. 2.
Balboa.....		52 (6)
Ancon.....	8 (2)	88 (23)
Ancon Hospital.....		2
Corozal.....	1 (1)	57 (16)
Pedro Miguel.....		47 (8)
Culebra.....	3 (1)	38 (9)
Empire.....	5 (1)	103 (18)
Las Cascadas.....		41 (3)
Bas Obispo.....		27 (2)
Gorgona.....	1	61 (30)
Gatun.....		88
Cristobal.....		132 (10)
Colon Hospital.....		
Toro Point.....		5
Porto Bello.....		6 (2)
Total.....	20 (5)	747 (130)

NOTE—The figures in parenthesis show the number of applicants already occupying regular or non-house-keeping family quarters at stations other than those at which applications are filed.

Sale at Public Auction.

OFFICE OF THE CHIEF QUARTERMASTER.

CULEBRA, C. Z., December 14, 1912.

There will be sold at public auction, by the Storekeeper, Quartermaster's Department, at Gorgona, Canal Zone, at his office, at 3 p. m., Saturday, December 21, 1912, to the highest bidder for cash the following Isthmian Canal Commission property:

- 1 Gasoline engine removed from Motor Car No. 1.
- 1 Gasoline engine removed from Motor Car No. 4.

WEATHER CONDITIONS, CANAL ZONE, NOVEMBER, 1912.

The rainfall for November was generally below normal, but much heavier along the Atlantic coast than in the Pacific and Central sections. The monthly totals ranged from 6.14 inches at Balboa to 25.82 inches at Porto Bello. The maximum fall recorded in one day was 4.70 inches at Miraflores on the 11th.

A series of freshets occurred in the Chagres river during the last week of the month, due to heavy rainfall over the upper Chagres basin. On November 28 the river reached the highest stage recorded since December, 1910.

The mean air temperature was normal at each station, while there was a general deficiency in cloudiness, except along the Atlantic coast, where the conditions were reversed.

The average hourly wind movement was the highest of record for the month of November. Fresh southerly winds prevailed over the Isthmus from the 10th to 15th, during the passage across the Caribbean Sea of a hurricane of destructive force. Following the passage of this storm the barometric pressure rose rapidly and brisk northerly winds prevailed. The heavy swell in Limon Bay did damage to the breakwater trestle and the mole for terminal piers at Cristobal.

The following table summarizes the weather conditions for the month:

STATIONS	Press re-duced to mean of 24 hours	Temperature.						Mean relative humidity.	Precipitation.			Wind.			
		Mean	Maximum	Date	Minimum	Date	Total inches		Station average	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction	Date
Colon	29.850	78.6	86	Nov. 5	73	Nov. 14	89	21.81	21.85	27	7,519	N. W.	34	N. W.	Nov. 17
Culebra	29.842	75.0	88	Nov. 22	69	Nov. 17	93	7.59	12.30	24	5,039	N. W.	27	N. W.	Nov. 17
Ancon	29.831	79.0	91	Nov. 26	69	Nov. 17	92	6.35	10.45	22	5,105	N. W.	25	N. W.	Nov. 17

The Government reserves the right to accept or reject any or all bids.

For further information apply to the Storekeeper, Quartermaster's Department, Gorgona, Canal Zone.
R. E. Wood,
Assistant Chief Quartermaster.

Band Concert

A concert will be given by the Isthmian Canal Commission band at the Tivoli Hotel, Ancon, C. Z., on Sunday, December 22, at 8 p. m. The program follows:

1. March—*Distant Greetings*.....Doring
2. Selection—*Bohemian Girl*.....Balfé
3. Intermezzo—*In the Shadows*.....Finch
4. Overture—*Stradella*.....Flotow
5. Popular Song—*On Moonlight Bay*.....Wenrich
6. Descriptive—*Evening Idyls*.....Barnhouse
7. Waltz—*Blue Danube*.....Strauss
8. Medley of popular songs.....Harris
9. March—*Wenn Heißt Wien*.....Schrammel

CHARLES E. JENNINGS, Musical Director.

The next concert will be given at Cristobal, on December 29, at 4 p. m.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, December 14, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela	Gumbau.	Gatun Lake.
Sun., December 8.....	127.4	93.6	53.2	53.1
Mon., December 9.....	127.5	93.6	52.9	52.7
Tue., December 10.....	127.8	93.8	52.5	52.3
Wed., December 11.....	127.7	93.8	52.1	52.0
Thurs., December 12.....	130.5	95.6	52.0	51.6
Fri., December 13.....	128.4	94.6	51.6	51.3
Sat., December 14.....	128.3	94.2	51.3	51.0

Height of low water to the nearest foot.....125.0 91.0 44.0

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending December 25, 1912. (75th meridian time):

Date.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
December 19.....		5.26	11.22	5.42	11.47
December 20.....		6.20	12.23	6.37	
December 21.....	12.42	7.13	1.20	7.30	
December 22.....	1.35	8.02	2.10	8.20	
December 23.....	2.25	8.50	3.00	9.10	
December 24.....	3.12	9.36	3.45	9.57	
December 25.....	3.58	10.22	4.31	10.45	

Notice to Mariners.

There have been numerous complaints of alleged violation of the laws of the Canal Zone, and notice is hereby given to all concerned that any or all violations of the law will be prosecuted. Especial attention is called to Rules 48 and 50. Attention is also directed to all the rules, for close and careful compliance.

J. ST. C. HUNT, Port Captain.

Balboa, December 9, 1912.

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday, and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Advance.....	P. R. R.	Saturday.....	Dec. 14
Panama.....	P. R. R.	Friday.....	Dec. 20
Allianca.....	P. R. R.	Friday.....	Dec. 27
Colon.....	P. R. R.	Friday.....	Jan. 3
Advance.....	P. R. R.	Thursday.....	Jan. 9
Panama.....	P. R. R.	Wednesday.....	Jan. 15
Allianca.....	P. R. R.	Tuesday.....	Jan. 21
Colon.....	P. R. R.	Tuesday.....	Jan. 28
Advance.....	P. R. R.	Monday.....	Feb. 3
Panama.....	P. R. R.	Monday.....	Feb. 10
Allianca.....	P. R. R.	Saturday.....	Feb. 15
Colon.....	P. R. R.	Friday.....	Feb. 21
Advance.....	P. R. R.	Friday.....	Feb. 28
Panama.....	P. R. R.	Friday.....	Mar. 6
Allianca.....	P. R. R.	Wednesday.....	Mar. 12
Colon.....	P. R. R.	Tuesday.....	Mar. 18
Advance.....	P. R. R.	Tuesday.....	Mar. 25
Panama.....	P. R. R.	Monday.....	Mar. 31
Allianca.....	P. R. R.	Saturday.....	Apr. 5
Colon.....	P. R. R.	Saturday.....	Apr. 12
Advance.....	P. R. R.	Saturday.....	Apr. 19
Panama.....	P. R. R.	Friday.....	Apr. 26

CRISTOBAL TO NEW YORK.

Colon.....	P. R. R.	Saturday.....	Dec. 21
Advance.....	P. R. R.	Thursday.....	Dec. 26
Panama.....	P. R. R.	Thursday.....	Jan. 2
Allianca.....	P. R. R.	Wednesday.....	Jan. 8
Colon.....	P. R. R.	Wednesday.....	Jan. 15
Advance.....	P. R. R.	Tuesday.....	Jan. 21
Panama.....	P. R. R.	Tuesday.....	Jan. 28
Allianca.....	P. R. R.	Sunday.....	Feb. 2
Colon.....	P. R. R.	Sunday.....	Feb. 9
Advance.....	P. R. R.	Saturday.....	Feb. 15
Panama.....	P. R. R.	Saturday.....	Feb. 22
Allianca.....	P. R. R.	Friday.....	Feb. 28
Colon.....	P. R. R.	Saturday.....	Mar. 8
Advance.....	P. R. R.	Wednesday.....	Mar. 12
Panama.....	P. R. R.	Tuesday.....	Mar. 18
Allianca.....	P. R. R.	Monday.....	Mar. 24
Colon.....	P. R. R.	Sunday.....	Mar. 30
Advance.....	P. R. R.	Monday.....	Apr. 7
Panama.....	P. R. R.	Saturday.....	Apr. 12
Allianca.....	P. R. R.	Friday.....	Apr. 18
Colon.....	P. R. R.	Thursday.....	Apr. 24

NEW YORK TO COLON.

Prinz Joachim.....	H.-A.-A.	Saturday.....	Dec. 14
Oruba.....	R. M.	Saturday.....	Dec. 21
Prinz Eitel Friedrich.....	H.-A.-A.	Saturday.....	Dec. 21
Prinz August Wilhelm.....	H.-A.-A.	Saturday.....	Dec. 28
Prinz Sigismund.....	H.-A.-A.	Saturday.....	Jan. 4
Prinz Joachim.....	H.-A.-A.	Saturday.....	Jan. 11

COLON TO NEW YORK.

Prinz Sigismund.....	H.-A.-A.	Monday.....	Dec. 23
Arcadian.....	R. M.	Tuesday.....	Dec. 24
Prinz Joachim.....	H.-A.-A.	Monday.....	Dec. 30
Prinz Eitel Friedrich.....	H.-A.-A.	Monday.....	Jan. 6
Prinz August Wilhelm.....	H.-A.-A.	Monday.....	Jan. 13

NEW ORLEANS TO COLON.

Saramacca.....	U. F. C.	Wednesday.....	Dec. 18
Abangarez.....	U. F. C.	Saturday.....	Dec. 21
Heredia.....	U. F. C.	Wednesday.....	Dec. 25
Atenas.....	U. F. C.	Saturday.....	Dec. 28

COLON TO NEW ORLEANS.

Atenas.....	U. F. C.	Thursday.....	Dec. 19
Cartago.....	U. F. C.	Thursday.....	Dec. 19
Parissima.....	U. F. C.	Thursday.....	Dec. 26
Saramacca.....	U. F. C.	Thursday.....	Dec. 26
Abangarez.....	U. F. C.	Thursday.....	Jan. 2
Heredia.....	U. F. C.	Thursday.....	Jan. 2

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers for New York, via Kingston and Santiago de Cuba, sailing every Monday, leave alternately at 10 a. m. and 2 p. m.; the *Prins Joachim* and the *Prins August Wilhelm* at 2 p. m., and the *Prins Sigismund* and the *Prins Eitel Friedrich* at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m.

The following ships arrived at, or departed from the port of Balboa during the week ending December 14: Arrivals—December 9, *Guatemala*, from Callao; December 10, *Ucayali*, from Callao; December 10, *San Juan*, from San Francisco.

Departures—December 10, *Acapulco*, to San Francisco; December 10, *Palena*, to Valparaiso; December 11, *Hualala*, to Callao; December 12, *Arica*, to Guayaquil; December 14, *Portland*, to San Francisco; December 14, *Ecuador*, to Guayaquil.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD.

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission for the month of November is published in full in this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and Divisions.

Lock Gate Inspection.

Six million rivets are required in the lock gates, and every one of them is carefully inspected before the contractor is paid for driving them. The inspection and testing of the gates are necessary to ensure a thoroughly good job. To properly protect the Government, 5 per cent of the total price is withheld until the gates prove themselves satisfactory by actual use.

Inspection of materials begins at the steel mills and of workmanship, at the shops of the contractor near Pittsburg. Inspection on the Isthmus is confined to erection methods and workmanship.

The gate leaves are shells of structural steel covered with a sheathing of steel riveted to the girder framework. They are 65 feet long, 7 feet thick and from 47 to 82 feet high. Each leaf is divided horizontally into two separate compartments. The lower compartment is watertight, for the purpose of making the leaf so buoyant that it will practically float in the water and thus largely relieve the stress upon the bearings by which it is hinged to the wall. This watertight compartment is subdivided vertically into three sections, each independently watertight so that if the shell should be broken in any way or begin to leak, only one section would probably be affected. An air shaft 26 inches in diameter runs from the bottom compartment up to the top of the gate, and this also is watertight where it passes through the upper half of the leaf.

After placing the steel plates upon the frame, the rivets are driven with care, and the edges of the plates are caulked, and inspectors follow closely each portion of the work. Within the great steel shell, made intensely warm from direct exposure to the sun, inspectors make their way, examining and

testing each rivet by the light of a candle, and marking those that are defective. Sometimes the head has been driven into the steel frame, again it will not center on the bolt, or it may be loose or broken. All imperfect rivets are rejected and cut out, and replaced by new rivets.

Watertightness is determined by filling the gate leaves with water. Inasmuch as the leaves are built to withstand pressure from without only, this is a severe test. One of the leaves at Gatun that is 77 feet high and weighs about 700 tons has been filled, through the air shaft mentioned above, to the full 77-foot height with five hundred tons of water. This gives a pressure of 32 pounds to the square inch at the bottom. So well has the work been done that only a few rivets show a tendency to "weep," and leaks develop in only very few of the joints. The results obtained have been surprising to the chief inspector, who has had many years experience in ship building, because the hydrostatic test on ship hulls usually reveals many more leaks at the rivet holes than have been found in the lock gates.

The lock gate inspection force on the Isthmus consists of about twenty men working in three sections under foremen experienced in shipyard work.

Foundations for Balboa Shops.

Foundations for the various buildings of the permanent shops at Balboa will be made upon piles driven in the mud flat along the east side of the Canal. The number required for each building will depend upon the size of the structure and the probable load that will be placed upon the foundation. The footings for the planing mill are all in, those for the lumber shed, the paint shop, and the general storehouse are being driven, and work on the others will be taken up as the piledrivers are at liberty. The clusters include from four to sixteen piles.

Guarding the Lock Machinery.

Operating machinery for the various moveable parts in the locks, such as gates, valves, and fender chains, will be installed in a tunnel in the center wall of the locks. In order to guard the machinery against malicious or careless persons, and to protect people who might be injured by handling it, steel doors will be erected in the passageways leading from the top of the center wall into the tunnel. The entrance to the stairway from the top of the wall will be guarded with a concrete parapet of artistic design.

High Tension Electrical Transmission Line.

A committee has been appointed to:

1. Review the plans for the proposed high tension power transmission line across the Isthmus.
2. Consider the various features of the telephone and telegraph cables, the possible disturbance to signal system, the probability of

the future electrification of the Panama Railroad; and to

3. Make recommendations relative to the best and most economical construction to be employed for all the different electrical conductors, all phases of the matter being taken into consideration, including any protection to electrical lines, and to guard against any possible attempts to cut communication in time of war.

The committee consists of Messrs. Edward Schildhauer, Lieut. F. Mears, Capt. W. H. Rose, C. F. Bleakley, W. H. Fenley, and W. R. McCann.

Naval Vessels to Visit the Isthmus.

It is planned to have the Atlantic fleet of the United States Navy visit the Isthmus during January or February in order that the officers and men may see the Canal before its completion. There will be 13 to 14 battle-ships each with a crew of about one thousand. They will come here from their winter practice near Cuba in four divisions, each remaining four or five days. On each of the days 1,000 men will be taken over the work.

A cable message from Washington announces that the Department of the Navy contemplates sending twenty oil burning torpedo destroyers to Colon in groups of five during January and February.

Spillway Sluice Gates Installed.

The first of the sluice gates for the spillway at Gatun Dam was placed in position on December 12, and two others were placed on the following day.

These gates weigh 44 tons each, with seals and bearings attached. They are built up of structural steel and are 47 feet 10½ inches in length and 19 feet high. They fit into steel grooves in concrete piers, and only one eighth of an inch play is allowed in each groove. On account of this small margin, the size of the gates, and the nicety required in their construction, it was thought that there might be difficulty in dropping them into place without removing the end rollers, rocker bearings, and the sealing devices. But no difficulty was experienced, although it developed that the play in one of the grooves was only one sixteenth of an inch.

Fourteen gates are required for Gatun Spillway, and they have already been erected at a point a little north of the Division Office—a distance by rail of about one mile and a half from the spillway. They are carried from the erecting grounds to the spillway on a single flat car, upon which they are loaded upright by two locomotive cranes, and are guyed to the car by lines leading from the top girder to the sides of the car. In the construction of the piers between which the gates operate, a high trestle was built, and upon this the cars containing the gates were pushed out over the weirs which they close. The cranes then lifted them from the cars, and lowered them

NOTES OF PROGRESS.

(Continued.)

slowly while men steered them into the grooves. The first gate was placed in about an hour, and the second and third in a few minutes each. Eleven gates yet to be installed will be placed as soon as the crest of the spillway dam and the piers are ready to receive them.

Eight gates of like construction and size are being assembled for the spillway of Miraflores Lake. As soon as the contractor finishes work on the caisson for the spillway of Gatun Dam, which is in process of erection at Gatun, he will set his force of erectors on the Miraflores spillway gates. This will be in about a month.

Visit of the President.

President Taft with his party arrived at Cristobal on the morning of December 24, on the *U. S. S. Arkansas*, convoyed by the *Delaware*. He was met by members of the Isthmian Canal Commission, the American Minister to Panama, and prominent officials of the Government of Panama, and of the Canal administration. He will leave on the return to Washington on December 26.

Rainfall from December 1 to 21, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon .....	.69	15	2.11
Balboa .....	.80	15	3.06
*Miraflores .....	.89	4	2.50
Pedro Miguel	1.26	15	3.28
Rio Grande .....	.58	15	2.40
<i>Central Section—</i>			
Culebra .....	.83	11	2.84
*Camacho .....	.58	1	2.46
Empire .....	.65	4	2.14
Gamboa	1.15	10	3.39
*Juan Mina .....	.38	16	1.20
Mina .....	.39	16	1.23
*El Vigia .....	.28	9	.70
*Gorgona	1.10	15	3.84
*Frijoles .....	.90	15	4.41
*Monte Lirio	1.50	16	4.20
<i>Atlantic Section—</i>			
Gatun	2.52	16	7.48
*Brooks Brook	1.80	15	7.91
Colon	2.20	15	9.09
Porto Bello	2.14	10	15.44

*Standard rain gage—readings at 5 p. m., daily.
Automatic rain gage at unstated stations—values midnight to midnight. †To 5 p. m., December 20.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, December 21, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela.	Gamboa.	Gatun Lake.
Sun., December 15.....	127.5	93.6	51.0	50.7
Mon., December 16.....	128.2	94.2	50.8	50.5
Tue., December 17.....	129.1	94.8	50.8	50.4
Wed., December 18.....	127.2	93.5	50.4	50.1
Thurs., December 19.....	127.2	93.4	50.1	49.8
Fri., December 20.....	127.2	93.4	49.9	49.6
Sat., December 21.....	127.2	93.4	49.6	49.4
Height of low water to the nearest foot	125.0	91.0	44.0	

Tide Table.

Date.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
December 26.....	4.45	11.10	5.18	11.33	
December 27.....	5.33	11.57	6.05		
		P.M.			
December 28.....	12.22	6.22	12.45	6.54	
December 29.....	1.14	7.12	1.36	7.45	
December 30.....	2.07	8.07	2.30	8.40	
December 31.....	3.06	9.06	3.28	9.40	
January 1.....	4.08	10.15	4.32	10.45	

BALBOA TERMINALS.

Work on the Foundations of the Quay.

Work on the terminal quay at the Pacific entrance is fairly started. The flat bank of the river shows a few cylinders of concrete sticking above the ground here and there like chimneys of a subterranean oven, and nearby a few small derricks, locomotive cranes, dump cars and other tools of excavation. The foundations of the quay are under construction. On the surface, men are handling black mud from pit to car, and molding concrete cylinders, while far down in the pits other men are digging toward bed rock.

The quay will extend from the dry dock entrance, along the edge of the anchorage basin to its north end, then along the north side to the point where the first pier will jut into the basin towards the channel of the canal. It will be carried throughout on concrete piers founded on bed rock. The distance from the surface to this rock varies at places from 100 feet to 40 feet, and at present the work is in the part where the deepest digging must be done.

In a period long past the lie of the land at the Pacific entrance was not such as it is today. Then a valley indented the surface northeastward from the Rio Grande mouth towards Ancon Hill, where there is now a broad flat of mud. In the course of many years the valley was filled with earth and rock secured from the hill, and it may be that a seismic disturbance helped to make the land here level. The workmen find evidences of this old valley as they dig for the foundation piers. First they excavate only thick black mud, then, from 40 to 60 feet down, they discover gravel, boulders, tree trunks and other vegetation, and then comes the hardpan that overlies the rock bottom of the swale.

The section of the quay upon which work is being done is 400 feet long, and 68 feet wide. This will rest upon 450 piers in four parallel rows spaced 35 feet apart, except under the railroad part where they will be closer together. The holes for these piers are dug through caissons which are 8 feet in outside diameter and 12 inches thick. They are made of reinforced concrete, and are built up in sections 6 feet high. The first or bottom section is unlike the others in that it is but 6 inches thick and is shod with a steel shoe in order that it may sink readily into the ground. The method of sinking the caissons or cylinders is to place them on the surface, dig the earth out from under them, when they sink to their own weight. When the first section has sunk beneath the surface of the ground, another section is added, and this process is kept up until the desired depth is reached. Then there is a hole lined with concrete down to rock, and this is filled with concrete, so that the pier is really a monolith reinforced with steel.

But as the concrete cylinder or caisson sinks deeper into the earth the ground around naturally settles toward and binds it, so that its own weight is not sufficient to force it down. Great blocks of concrete eight tons in weight are loaded upon it, and the caisson drops slowly and evenly until it disappears entirely.

In order to overcome the binding effect upon the cylinders, the engineer in charge of construction has begun to make the sections above the first or bottom one, six inches less in diameter. In this way a hole 8 feet in diame-

ter is dug for the bottom caisson, and the sections imposed upon it have play of three inches all around. Further to facilitate the downward movement of the caissons and prevent binding, a three-fourths inch pipe has been embedded in the top of the first section of each caisson near the outside edge. Water under 140 pounds pressure will be carried to this pipe, and holes in it will allow jets of water to play upwards and fill the three inch space between the caisson and the surrounding earth, which will probably prevent binding.

One of the inconveniences of this work so far below the surface of the ground is the striking of subterranean veins of water. It is necessary to install pumps to keep the holes dry enough for the men to work in them. Two laborers were digging in one of the caissons on Saturday, 70 feet below the surface, when there was a rush of water from some underground spring and the cylinder began to sink more rapidly than usual. The men in the pit shouted and the engine began to hoist them to the surface. They were trembling with fear. There really was no danger, but one of the more experienced men had to go down himself to show that all was safe. Work so deep down in the earth as this is not pleasant for it is in semi-darkness, the bottom is wet and muddy, and the air is foul. On this account the caisson workers receive 16 cents an hour pay.

At present the average penetration is about 45 feet a day with short equipment, but as soon as more cranes can be spared from other parts of the Canal this will be greatly increased. Then, too, the work will go faster when the deep part of the old valley is passed, for it is easier to sink two caissons 40 feet than one 60 feet. After some of the piers are in place the superstructure will be begun, and arches of concrete and steel will span the spaces between the piers, which must be heavily and securely built to bear the weight of the superstructure, of the merchandise which will be piled upon it, and the railway trains that will run over it.

Brotherhood of Locomotive Engineers.

Canal Zone Division No. 756, Brotherhood of Locomotive Engineers will hold a meeting at the I. C. C. Lodge hall at Cristobal on Sunday, December 29 at 1.30. A full attendance is requested as matters of importance will be under consideration.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, engineers, and chauffeurs will be held by the Board of Local Inspectors at the Office of the Deputy Collector of Revenues, Cristobal, on Thursday, January 2, 1913. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application and information respecting the filling out of same, not later than the day previous to the examination. All applicants for examination must be present at the office of the Deputy Collector of Revenues, Cristobal at 8 a. m., with papers in proper form. In addition, applicants for chauffeur's licenses must bring an automobile with them in order to demonstrate their ability to operate the same.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Cristobal, C. Z., on Sunday, December 29, at 4.30 p. m.

The next concert will be given at Gatun, on January 5, at 5 p. m.

CANAL WORK IN NOVEMBER.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., December 14, 1912.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of November, 1912:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central and Pacific Divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry	Cubic yards...	2,203	973,071	303,755	1,279,029
Work excavation, wet	Cubic yards...	678,247		548,032	1,226,329
Total work excavation	Cubic yards...	680,450	973,071	851,837	2,505,358
Plant excavation, dry	Cubic yards...		3,000		3,000
Plant excavation, wet	Cubic yards...			2,668	2,668
Total plant excavation	Cubic yards...		3,000	2,668	5,668
Total Canal excavation	Cubic yards...	680,450	976,071	854,505	2,511,026
Material placed in dams	Cubic yards...	184,485		64,145	248,630
Concrete placed in locks and dams	Cubic yards...	7,232		47,846	55,078
Explosives used	Tons (Gross)...	38.47	133.28	90.11	266.86
Rock drilled	Feet	19,201	323,574	115,550	458,325
Tracks removed	Miles		5.17		5.17
New tracks laid	Miles	1.5	5.89	5.75	13.14
Rock crushed	Cubic yards...			54,048	54,048
Cement used	Barrels	10,282	16	48,904	59,202
New roads built	Miles	.19		.10	.29
Water mains laid	Feet	5,469	434	7,997	13,900
Sewers laid	Feet	400			400
Open drains and ditches dug	Feet	17,660	4,2259	22,886	82,805
Average daily force		4,662	6,639	7,896	19,156
Average rainfall	Inches	20.50	8.57	7.28	10.70

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the division engineers and the erection subdivision of this office, the inspection of this work being cared for by the masonry and lock structures subdivision. This subdivision is also charged with general inspection of masonry work of all the locks.

INSPECTION OF INSTALLATION OF RISING STEM GATE VALVES, ERECTION OF SPILLWAY GATES AND CAISSONS, AND ASSEMBLY OF HYDRO-ELECTRIC DRAFT TUBES AT GATUN.

The work of preparing rising stem gate valve chambers and installation of valves, and erection of spillway gates, progressed satisfactorily during the month.

No work has yet been done on the erection of the caissons.

Work was continued on assembly and riveting of draft tubes for the hydroelectric station at Gatun.

LOCK GATES AND PROTECTIVE DEVICES.

Up to the 20th of November, a total of 60,866 tons of steel plates and shapes had been accepted at the rolling mills. In the above tonnage is included 1,414 tons on replace orders and 1,979 tons for spare parts, making a total of 57,473 tons rolled on the original order for 92 leaves, or practically all the material needed. A total of 48,792 tons of riveted structural steel has been shipped from the Rankin shops, or about 96 per cent of the total contract weight of this class. The total tonnage of lock gate material erected on December 1, 1912, in the different locks, without regard to its being fully reamed or riveted, was 33,292 tons, out of a total of 58,000 tons, or about 57 per cent. Of this,

1,964 tons, or about 3½ per cent of the total, were erected during the month. The number of field rivets driven was 2,230,289, or about 41 per cent of the total, of which 334,819 rivets, or about 6 per cent of the total, were driven during November. The tonnage erected was about 50 per cent greater and the number of rivets driven 4 per cent greater than the corresponding quantities for the preceding month. The status of the work in the several locks may be summarized as follows:

Gatun—Work is in progress on all the leaves, forty in number. Erection, 70 per cent completed; reaming, 67 per cent completed;

riveting, 53 per cent completed; finishing, 10 per cent completed.

Pedro Miguel—Work is in progress on the entire 24 leaves. Erection, 80 per cent completed; reaming, 71 per cent completed; riveting, 65 per cent completed; (no gates finished.)

Miraflores—Work is in progress on 16 of the 28 leaves. Erection, 21 per cent completed; reaming, 4 per cent completed; riveting, 6 per cent completed; (no gates finished.)

LOCK GATE RECESS COVERS.

At Gatun, out of a total of 40 recess covers, 4 remain to be aligned and 7 are still to be grouted. At Pedro Miguel all have been aligned and grouted, while at Miraflores 8 out of the 26 have been erected and 15 of this number have been riveted.

CHAIN FENDERS.

All material for the first chain fender, No. 812-813, including the piping, valves, etc., has been received at Gatun. The material for all hawse pipe castings has been received, except for four special ones in the fenders at the lower end of Miraflores locks. Two pumps and motors have also been received. The material for the first fender was erected previous to November 1; no work on same was done during the month.

INSPECTION AND ERECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection of the operating machinery and electrical equipment. The contractors are generally behind hand in their deliveries, but progress is being made with a view of bringing the rates of delivery up to the promised schedule. During the month another conference was held at the office of one of the principal contractors. The pre-

vious meeting, mentioned in last month's report, resulted in increased output. The rate of installing the machines keeps pace with the receipt of the various parts. On account of the late deliveries of electrical material, the force for the electrical work is not being recruited as fast as provided in the schedule. The following tabulations are given as a summary of the work:

RISING STEM GATE VALVES.

	Gatun—56		Pedro Miguel—24	
	*Assembled.		Placed.	
During mo.	6	6	4	3
To date.	20	26	14	10

*Valves assembled with seals after being placed.

FIXED IRONS AND TRACKS FOR RISING STEM GATE VALVES.

	Gatun—112		Pedro Miguel—48	
	Partially installed.	Installed.	Partially installed.	Installed.
During mo.		9		4
To date.		50		14

GUARD VALVES.

	Gatun—6		Pedro Miguel—6	
	Assembled.		Placed.	
During mo.				
To date.		6		

RISING STEM GATE VALVE MACHINES.

	Gatun—56.		
	Received.	Partially installed.	Installed.
During month.	11	2	
To date.	40	21	13

Pedro Miguel—24

	Received.	Partially installed.	Installed.
During month.	0	2	4
To date.	24	19	10

Nine machines have been received for Miraflores locks.

RACK TRACK.
(In one-foot units.)

	Gatun—21,945 feet.			
	Dist.	Track laid.	Frozen.	Completed.
During month.	397	858	573	2,355
To date.	16,524	16,524	15,188	9,825

Pedro Miguel—13,213 feet.

	Dist.	Track laid.	Frozen.	Completed.
During month.	710	439	200	640
To date.	8,567	8,296	6,195	6,301

1,000 feet of rack distributed at Miraflores.

CYLINDRICAL VALVE MACHINES.

	Gatun—69.		
	Received.	Partially installed.	Installed.
During month.	19	20	17
To date.	60	41	19

Pedro Miguel—20.

	Received.	Partially installed.	Installed*
During month.			1
To date.	20	20	17

*Except motors.

Twenty machines received for Miraflores to date eighteen partially installed during month.

AUXILIARY CULVERT VALVE MACHINES.

	Gatun—4.		
	Received.	Partially installed.	Installed.
During month.			
To date.	4	4	

Pedro Miguel—4.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	4	4	

Two machines received to date for Miraflores.
MITER GATE MOVING MACHINES.

Gatun—40.			
	Received.	Partially installed.	Installed.
During month.....	0 comp.	6	1
To date.....	3 comp.	15	3

Pedro Miguel—24.			
	Received.	Partially installed.	Installed.
During month.....	0 comp.	1	
To date.....	0 comp.	13	

MITER FORCING MACHINES.

Gatun—20.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	1		1

Pedro Miguel—12.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

MITER GATE RECESS COVERS.

Gatun—36.			
	Placed.	Frozen.	Completed.
During month.....		7	9
To date.....	36	26	15

Pedro Miguel—20.			
	Placed.	Frozen.	Completed.
During month.....		4	
To date.....	20	11	

Miraflores.			
	Placed.	Frozen.	Completed.
During month.....			
To date.....			

ELECTRICAL WORK—ATLANTIC DIVISION.

Conductor rails, insulators, brackets and cover plates were installed on 6,899 feet of straight track and 371 feet of curved track—total 7,270 feet, making a total to date of 14,379 feet. Of this, 7,396 feet have been equipped with steel conductor bar and 6,967 feet with copper conductor. Progress has been made in pulling cable into the conduit system, a total of 95,265 feet having been pulled to date. The cable pulling was handicapped somewhat by the nonreceipt of cable grips. All of the cable that has been pulled in the west side wall of the upper lock from transformer No. 756 to transformer No. 752 has been covered with tile in the manholes. The amount of duct which has been rodded, cleaned and wired totals 131,000 feet. Repairs and changes required on the temporary light and power system were made as required during the month.

ELECTRICAL WORK—PACIFIC DIVISION.

Pedro Miguel—Conductor rails, insulators, brackets and cover plates were installed on 3,038 feet of track equipped with copper conductor. A total of 40,105 duct feet of vitrified tile conduit was rodded, cleaned and wired preparatory to pulling cable; a total of 84,061 duct feet has been prepared to date. There were installed in the north approach wall 3,000 feet of fibre conduit, making a total of 6,542 duct feet to date. The total amount

of 3-conductor No. 0000 cable pulled to date is 2,400 feet. The temporary light and power system was maintained, altered and extended as required by the progress of the work.

Miraflores—The temporary light and power system was maintained, altered and extended to meet the needs of the work, and 76,840 feet of duct were rodded, cleaned and wired preparatory to pulling cable.

EMERGENCY DAMS.

Inspection was in progress at four localities in the United States and 868 tons of material were accepted. At the end of the month 7,148 tons had been fabricated and accepted. About 1,308 tons were delivered on the Isthmus during the month and approximately 237 tons were erected. On November 30 a total of 4,870 tons had been delivered and 1,974 tons erected. Work was in progress on the east and west dams at Gatun.

AIDS TO NAVIGATION.

Ten range towers of the Atlantic and Pacific Division type, including foundations, were completed, except that six steel lantern doors must be hung, stair railings erected, towers painted and permanent lights installed in each. Five range towers of the Gatun Lake section type, with foundations, were completed, except that doors must be hung, steel ladders erected, lantern glass set in place, towers painted and permanent lights installed in each. One range tower is 90 per cent completed. The excavations for two range towers of the Gatun Lake section type are completed and 40 per cent of the material is at the site. One foundation for Atlantic and Pacific Division type of tower is completed and one caisson foundation for the same type has been sunk to bed rock. Three skeleton tower beacons for the Pacific Division, including foundations, were completed, except that ladders must be painted, lens pedestals set up and permanent lights installed. The caisson for the west breakwater light was completed up to a height of 25 feet and was sunk at the inner end of Limon Bay in 20 feet of water, where it will remain until its riprap foundation at the outer end of the west breakwater is completed. Six concrete steel reference targets 20 feet high were completely erected. At the Balboa plant of the lighthouse subdivision 55 reinforced concrete beacons were cast in units and are ready for setting up at their respective sites upon completion of their foundations. There were also cast and completed at this plant 119 48-inch by 48-inch by 26-inch concrete sinkers for gas buoys and 105 24-inch by 24-inch by 18-inch concrete sinkers for spar buoys. Seventy-five concrete foundations for the electric light line from Aguadulce Pumping Station to Range No. ½ and Beacons Nos. 5 and 7, Pacific Division, were placed, 18 "dead men" set and 75 poles erected. During the month work was in progress on the erection of range towers No. 17-18 and 11, Gatun Lake Section; reference targets at Bohio North, Bohio P. I., and Pena Blanca P. I.; electric light line; and in the making of necessary surveys and reconnoissances.

Atlantic Division.

GATUN LOCKS.

Excavation—In preparing foundations 1,353 cubic yards of rock were excavated by hand and cranes, and 8,000 cubic yards of mud were removed by sluicing. There were 30,480 cubic yards of borrow pit excavation made by

shovel for the locks backfill, fill in the dam, and for construction tracks.

Backfill—Backfilling behind the side and center walls of the locks was continued, the quantity placed during the month aggregating 12,411 cubic yards. The total amount placed to December 1 was 1,908,355 cubic yards. On that date the work was 92.05 per cent completed.

Receiving and issuing material—No rock was received during the month; 7,693 cubic yards were issued. The issues of sand amounted to 3,650 cubic yards; 520 cubic yards were added to the storage pile as a by-product of rock screening. There were 12,668 barrels of cement received and 8,716 barrels issued.

Mixing and placing plants—Plant No. 1 and portable mixers were kept in satisfactory operation during the month.

Concrete work—A total of 6,028½ cubic yards of concrete was laid, distributed as follows: upper lock, 893 cubic yards; middle lock, 1,316 cubic yards; lower lock, 3,819½ cubic yards. On November 30 the concrete work was 92.82 per cent completed.

OPERATION OF CONCRETE CONSTRUCTION PLANT.

Length of working day (hours).....	9.00
Average number of hours per day worked per strand of cableway laying concrete (actual working time).....	.98
Average number of mixers per day.....	2.00
Average hourly output per mixer (actual working time) cubic yards.....	33.27
Average amount of concrete laid per hour, per strand of cableway (actual working time) cubic yards.....	3.63
Concrete laid (cubic yards) cableways.....	5,500
Concrete laid (cubic yards) derricks.....	25
Concrete laid (cubic yards) portable mixers.....	436
Concrete laid (cubic yards) hand mixers.....	94

Total amount of concrete laid (cubic yards) 6,055

GATUN DAM.

Construction during the month increased the total fill, as determined by cross-section of the material in place deposited during the month, by 184,485 cubic yards, making the total amount in place 20,925,835 cubic yards. On December 1 the dam was 96.4 per cent completed.

Hydraulic fill—There was no increase made in the hydraulic fill, the total in place remaining at 10,124,082 cubic yards.

Dry fill—Allowing an arbitrary reduction of 50,000 cubic yards to cover slow consolidation in slopes not cross-sectioned, the material received from steamshovels amounting to 184,485 cubic yards was placed on the north and south toes of the dam east and west of the spillway, making the total dry fill in place 10,801,753 cubic yards. Cross-section of the month's dry fill shows a loss of 1.61 per cent from car measurement.

Hydroelectric plant—During the month 850 cubic yards of earth and rock were removed by hand and crane in the preparation of foundations, making a total excavation of 96,249 cubic yards. There were 348 cubic yards of concrete placed, making the total to date 556 cubic yards.

GATUN SPILLWAY.

Backfill—No backfilling behind the spillway walls was done during the month, the total on November 30 remaining at 16,495 cubic yards.

Concrete—A total of 855 cubic yards of concrete was laid during the month. Concrete work for the spillway was 92.69 per cent completed.

Excavation—There was no material excavated during the month, the total remaining at 1,591,261 cubic yards.

HARBOR AND CHANNEL SECTION.

Dredging from the ocean to Mindi—Six dredges removed 609,480 cubic yards of earth and 60,767 cubic yards of rock from the canal prism. In addition, the dredge *Mindi* removed 36,432 cubic yards of coral rock from between docks Nos. 16 and 17, Panama Railroad Company's Cristobal Terminal Docks. On November 30, 1912, forty feet of water could be carried from zero to zero plus 2,100 feet, thirty-five feet to mile post 4 plus 3,600 feet, thirty feet to mile post 5 plus 2,300 feet, twenty feet to mile post 6 plus 1,900 feet. The *Terrier* drilled 3,177 feet, used 25,930 pounds of dynamite and shot 14,220 cubic yards of earth and 35,850 cubic yards of rock to minus 45 feet, mean sea level.

West breakwater, Colon—No trestle was driven during the month of November, the total length remaining at 11,434 feet. There were 13,389 cubic yards of Porto Bello rock unloaded, of which 7,042 cubic yards were handled by cranes and 5,347 cubic yards by the derrick barges, making the total amount unloaded to December first 118,556 cubic yards.

MUNICIPAL ENGINEERING.

New Colon waterworks—The excavation for the pump pumps was completed, the concrete floor laid, and the walls raised to a height of three feet. Excavation for the foundations of the filter building was commenced and approximately 2,000 cubic yards of material removed. This excavation was 50 per cent completed at the end of the month.

The reservoirs, water mains, sewers, roads and oil pipe lines were maintained and extended as required to facilitate construction work. Work was continued on the Colon street improvements.

Central Division.

During the month the total amount of material excavated by the Central Division was 976,091 cubic yards, of which 174,249 cubic yards were classified as earth and 801,822 cubic yards as rock. The entire amount was removed by steamshovels. Of this total, 973,071 cubic yards were primary excavation in the canal prism and 3,000 cubic yards from New Paraiso incline, east Station 1895 to 1900.

The daily average number of steamshovels at work was 36.45 and the total number of shovel days was 856½, as compared with 35.52 shovels at work and 959 shovel days in October. For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table has been prepared:

Period	Excavated by shovels.	Classification of material.		Av. No. of shovels at work	W'kg days.	Av. yards per shovel day.
		Rock.	Earth.			
1911:	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>			<i>C. Y.</i>
Nov...	1,212,548	1,089,021	123,527	41.54	24	1,216
1912:						
Nov...	976,071	801,822	174,249	36.45	23½	1,140

Rainfall at Empire: 1911, 11.73 ins.; 1912, 8.64 ins.

The above table shows the average output per shovel to be 6.25 per cent less in November, 1912 than in the corresponding month of 1911.

The total amount of material excavated from the Culebra section in November, 1912—976,071 cubic yards—was the lowest record in that section for the month of November since 1907; in November of that year only 834,676 cubic yards were removed.

The total estimated amount of material

(dry excavation) to be removed in the Central Division, according to revised estimate of July 1, 1912, was 106,116,221 cubic yards, and up to December 1, 1912, 99,860,153 cubic yards had been removed, leaving 6,256,068 cubic yards to be removed in order to complete all dry excavation in the Central Division. From these figures it will be seen that 94.10 per cent of all excavation in this division was completed on November 30, 1912, and that 5.9 per cent remained to be removed. At the close of November's operations the status of the excavation in the two sections which compose this division was as follows:

CULEBRA SECTION.		<i>Cu. Yds.</i>
Completed.....	87,475,498	
To be completed.....	6,256,068	
		93,731,566
CHAGRES SECTION.		<i>Cu. Yds.</i>
Completed.....	12,384,655	

From the above figures it will be seen that the Culebra Cut is 93.33 per cent completed. The Chagres section is entirely completed, so far as dry excavation is concerned, but it is estimated that about 300,000 cubic yards of wet excavation will have to be made in this section.

Work performed for the Pacific Division during the month included the removal of 20,814 cubic yards of rock by steamshovels, the drilling of 4,180 linear feet of holes, the use of 7,500 pounds of dynamite in blasting; all done in connection with preparation for foundations of the Miraflores spillway. In addition, miscellaneous service, such as transportation of spoil, dumping, etc., was performed.

During the month 18,835 cubic yards of material were dumped on the embankment for the new roadbed of the relocation of the Panama railroad, increasing the total amount furnished for this purpose to 4,466,809 cubic yards.

For use in construction of the Gatun Dam, 31,312 cubic yards of rock were furnished to the Atlantic Division, making the total amount of material furnished for this purpose 5,417,915 cubic yards.

There were also furnished during the month to the Panama Railroad Company, for the Cristobal mole, 21,147 cubic yards, the total amount furnished to December 1 for this purpose being 119,047 cubic yards.

During the month there were 169 linear feet of double track trestle driven for the Naos Island Breakwater, completing the trestle from the mainland to the island. There were 135,204 cubic yards of material dumped from the trestle during the month, making the total quantity dumped on November 30th 1,005,439 cubic yards.

The daily average number of laborers at work in this division during the month was 6,093, while the average number of gold men working was 546.

Pacific Division.

DISTRICT NO. 1—LOCKS, DAMS, AND DRY EXCAVATION.

Excavation—The total excavation during the month amounted to 267,714 cubic yards, of which 199,776 cubic yards were classified as rock and 67,938 cubic yards as earth.

Filling and embankment—During the month 18,030 cubic yards of dry filling were added to the prism of the Pedro Miguel west dam, increasing the total amount of material in place at the end of the month to 658,984 cubic yards. The backfill at Pedro Miguel was increased by 19,853 cubic yards, the total quantity in place

at the close of the month being 760,531 cubic yards.

At Miraflores, the dry filling in the toes of the west dam was increased by 46,115 cubic yards, making the total quantities of dry and hydraulic filling in place at the end of the month 1,445,934 cubic yards and 661,048 cubic yards, respectively. The backfill at Miraflores was increased by 68,911 cubic yards, the total amount in place at the close of the month being 975,118 cubic yards.

OPERATION OF THE AUXILIARY CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours).....	8.00
Average number of hours per day worked laying concrete and large stone (actual working time).....	7.40
Average number of mixers per day.....	4.47
Average hourly output per mixer, actual working time (cubic yards).....	10.25
Large rock laid (cubic yards).....	7,972.00
Concrete laid (cubic yards).....	7,972.00
Total concrete laid (cubic yards).....	7,972.00

Daily average of one-half cubic yard mixers, 4.47, the output of which was placed by hand and by mixers discharging directly into forms.

Pedro Miguel Locks—Excavation was continued in the canal prism south of the locks and in the foundation of the lower guide wall. Backfilling of the two side walls and north wing walls was continued. The concrete work consisted of the construction of the north wing walls, caisson sill in forebay, and installation of electric cable ducts. No fixed irons were placed in the lock masonry at Pedro Miguel. The total amount of concrete and large stone laid at Pedro Miguel was 7,972 cubic yards, as compared with 6,627 cubic yards for October. The concrete was placed as follows: Two thousand seven hundred and eighty cubic yards in the northeast wing wall, 3,617 cubic yards in the northwest wing wall, 767 cubic yards in the east wall, 63 cubic yards in the center wall, 175 cubic yards in the west wall, and 570 cubic yards in the floors.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours).....	8.00 & 12.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time).....	4.00	6.20
Average number of mixers per day.....	7.40	4.25
Average hourly output per mixer, actual working time (cubic yards).....	47.28	10.32
Average amount of concrete and large stone laid per hour per berm or chamber crane (actual working time) (cubic yards).....	49.12	
Large rock laid (cubic yards).....	31,191.00	8,743.00
Concrete laid (cubic yards).....	31,191.00	8,743.00
Total concrete laid (cu. yds.).....	31,191.00	8,743.00

Permanent plant consisted of four berm cranes and four chamber cranes.

Berm cranes E and F worked 12 hours a day from November 14th to 30th. Chamber cranes Nos. 1 and 3 worked 12 hours a day throughout the month.

Auxiliary plant consisted of two 1-cubic yard mixers, having a daily average of 0.89; five ½-cubic yard mixers, having a daily average of 4.25; and three locomotive cranes and derricks, having a daily average of 1.53.

Miraflores Locks—Dry excavation was continued in the canal prism south of the locks, the material being used for backfilling the locks, filling on the west dam and for swamp reclamation. The excavation of the spillway was continued. Concrete work consisted of construction of the north approach and wing walls, and the extension of the west wall, south guide wall, operating tunnels and sills and floor of the lower west chamber. The amount of iron placed in the masonry amounted to 436,835 pounds. The total amount of concrete and large stone laid at Miraflores was

39,934 cubic yards, which was placed as follows: North center guide wall 2,335 cubic yards; northwest wing wall, 636 cubic yards; east wall, 4,654 cubic yards; center wall, 6,496 cubic yards; west wall, 12,516 cubic yards; southeast wing wall, 160 cubic yards; south center guide wall, 9,672 cubic yards; floors, 3,347 cubic yards; around ducts in area A, 30 cubic yards; around ducts in area B, 3 cubic yards; and around ducts in area C, 25 cubic yards.

DISTRICT NO. 2—DREDGING, BALBOA SHOPS, AND SHIPWAYS.

The following is a statement of the output of the seven dredges which were in operation during the month, and of the amount of material excavated hydraulically:

DREDGE.	Type.	WORK.			PLANT.		Total.	Remarks
		Earth.	Clay.	Rock.	Earth.	Rock.		
		Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	
Cardenas.....	Dipper....	5,358	14,028	13,164	.....	.....	32,550	Scow measurement
Corozal.....	Ladder....	10,673	65,445	80,828	.....	.....	156,946	Place measurement
Marmot.....	Ladder....	2,287	7,273	7,634	.....	.....	17,194	Place measurement
Badger.....	Ladder....	13,726	42,393	.....	.....	.....	56,119	Place measurement
Mole.....	Ladder....	.....	11,415	.....	.....	.....	11,415	Scow measurement
Culebra.....	Suction....	174,779	.....	.....	2,668	.....	177,447	Scow measurement
No. 85.....	Suc. (P. L.)	.....	.....	.....	13,509	.....	13,509	Place measurement
Total.....	.....	206,793	140,554	101,626	16,477	.....	389,895	.....
Hydraulic exca..	.....	85,300*	.....	.....	.....	.....	95,859	Place measurement
Grand total.....	.....	292,093	140,554	101,626	16,477	.....	485,754	.....

*Excavated from Canal prism, south of Miraflores.

Chamé sand excavation—Approximately 35,768 cubic yards of sand were excavated at Punta Chame and delivered to the Balboa sand bins.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

Reservoirs, water mains, sewers and oil pipe lines were maintained and extended as required to facilitate construction work.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day (hours).....	8.00
Average number of hours per day (actual working time).....	7.54
Average number of cubic yards crushed per hour per working day.....	250.22
Average number of cubic yards crushed per working hour.....	298.60
Total output for the month (cubic yards).....	54,048.00

Quartermaster's Department.

Labor—The force report of November 27 showed 40,196 men actually at work; this number includes the force of the McClintic-Marshall Construction Company. The shortage of unskilled labor continued throughout the month.

Buildings—The District Court building was moved from Gorgona to Pedro Miguel where it will be used as gold bachelor quarters. Two laborers' barracks were moved from Gorgona to Corozal Farm.

Quarters—The congestion of gold bachelor quarters at Gatun, Pedro Miguel and Corozal noted in the report for October, continued throughout the month.

Material and supplies—The total value of material received was \$970,523.03. This material came forward in 30 steamers, the total weight of cargo, exclusive of lumber, piling and ties, being 30,793 tons.

Subsistence Department.

The operation of the line hotels resulted in a net profit of \$36.84. The Hotel Tivoli showed a net profit of \$4,081.96. European laborers' messes, colored laborers' kitchens, restaurants, penitentiary tugs and dredges returned a net profit of \$2,738.57. The total

net profit on subsistence operations for the month was \$6,857.37.

Department of Civil Administration.

Courts—During the month three civil cases were disposed of in the Supreme Court; 58 civil and 43 criminal cases in the Circuit Courts; and 42 civil and 642 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES.

Money order sales amounted to \$418,851.12, and the fees to \$2,055.78. Receipts from stamp and card sales and newspaper postage aggregated \$7,727.14. The total collection of revenues made was \$19,174.20; and the collections on account of court fines, costs and fees \$3,542.79. A total of \$124,173 was deposited in postal savings accounts

and a total of \$87,390 was withdrawn. At the port of Ancon 30 vessels entered and 29 cleared, and at the ports of Cristobal 25 entered and 23 cleared.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 661, of whom 606 were men and 55 women. Twenty-three nations or forty-seven separate states and dependencies were represented. There were 10 convicts committed to the penitentiary and 16 were discharged, leaving 127 convicts in confinement at the close of the month. The cost of guarding and subsisting these convicts was \$2,501.33 and the value of the work performed by them on the roads of the Canal Zone was \$2,043.40.

DIVISION OF FIRE PROTECTION.

There were five fires reported in the Canal Zone. The damage to Commission property was \$35 and to private property \$15.

DIVISION OF PUBLIC WORKS.

In the city of Panama the average daily consumption of water was 1,608,008 gallons, and in Colon 1,332,335 gallons. The usual inspection and maintenance work in this division was performed.

DIVISION OF SCHOOLS.

The net enrollment in the white schools was 1,202, the average number of pupils belonging was 1,097.4, and the average daily attendance 1,029.9. In the colored schools the net enrollment was 1,130, the average number belonging 925.3, and the average daily attendance 742.6. At the close of the month there were employed in the white schools 45 teachers and in the colored schools 29 teachers, the total being one less than the number employed at the close of the preceding month.

Department of Sanitation.

The total number of deaths from all causes among employes was 48, divided as follows: from disease 32 and from violence 16, giving an annual average per thousand of 7.31 and 3.65 respectively. The annual death rate

per thousand among employes for the month of November, 1911, was 9.75.

The annual death rate per thousand in the Canal Zone and in the cities of Colon and Panama, including both employes and non-employes, was 25.46. This rate is based upon a population in the Canal Zone of 62,810 according to the census of February, 1912, and populations in Panama and Colon of 47,172 and 20,232, respectively, as estimated by the Department of Sanitation. The annual average death rate per thousand among the same classes of population for the month of November, 1911, was 20.29.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was: Whites 2.80, blacks 8.77, giving a general average for disease of 7.31. For the same month during 1910 the annual average death rate per thousand from disease among whites was 5.55, blacks 12.59, giving a general average of 10.69; and for the same month during 1911, whites 6.62, blacks 8.27, giving a general average of 7.85.

Among employes during the month, deaths from the principal diseases were as follows: Abscess of liver ontamoebic 1, lobar pneumonia 6, malaria fever, E. A., 1, organic disease of heart 4, pellagra 1, tuberculosis, 4, leaving 15 deaths from all other diseases and 16 deaths from external violence.

No case of yellow fever, small pox or plague originated on or was brought to the Isthmus during the month.

Respectfully,
GEO. W. GOETHALS,
Chairman.

OFFICIAL CIRCULARS.

Tampering with Electrical Fixtures and Equipment at Locks Forbidden.

CULEBRA, C. Z., December 21, 1912.

CIRCULAR No. 468:

Any person found guilty of removing incandescent lamps or tampering with protective coverings of cables, panels and other equipment about the locks will be liable to prosecution. If such person is an employee of the Isthmian Canal Commission he will be dismissed from the service.

GEO. W. GOETHALS, Chairman.

Surcharge on Invoices covering Material and Supplies furnished the Navy Department.

HEADS OF DEPARTMENTS AND DIVISIONS:

The Secretary of the Navy has called attention to the difficulties caused and adjustments made necessary in the accounts of vessels and stations due to the fact that the Commission does not always show on the invoices covering material and supplies furnished, the surcharge which is to be added to the price charged, and has requested the Secretary of War to issue instructions to the Isthmian Canal Commission to take such steps as will insure that the surcharge mentioned, if any, is added to the original invoices (not summaries) so that each original invoice (not yellow summary) that is presented to a vessel or at a station for signature may show the ultimate charge on account of material listed thereon.

You will comply with the request of the Secretary of the Navy, and insert on all original invoices for materials, supplies, or labor furnished the Navy Department, or any vessel or station thereof, the surcharge that is to be added to the price of the material so that such invoice will show the total charges.

GEO. W. GOETHALS, Chairman.

Sailing Date of "S. S. Cristobal."

All Concerned:

The sailing date of the *S. S. Cristobal* has been set for Saturday, December 28, at 3 p. m., from Pier No. 11, Cristobal.

J. A. SMITH, General Superintendent.

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday, and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

The date fixed for the annual meeting of the Canal Zone Federation of Women's Clubs is January 25. One of the speakers at the afternoon meeting will be Dr. Edward Thomas Devine, educator and economist. Dr. Devine has been associated with the Charity Organization of New York, and was editor of *The Charities and Commons*; he is also connected with the Child Labor Committee, and was prominent in the Red Cross relief work in the San Francisco earthquake in 1906. The subject of his address will be "The Abolition of Poverty." Other speakers will be announced later. Clubwomen of the federated clubs of 1908-1910 are reminded to send their names to the corresponding secretary, Mrs. Thomas Edwin Brown, Jr., Cristobal, in order that transportation may be secured for them.

The meetings of the Cristobal Woman's Club for January will be as follows: January 8, general meeting, under the art and literature department, subject, Spanish artists; January 15, home department, subject, Domestic animals; January 29, the monthly meeting of the executive board in the clubhouse at 9 a. m. The annual complimentary concert will be given by the art and literature department in the clubhouse on January 22 at 8 p. m. The program is announced as a "Costume recital; Legends and songs of many lands."

The following is the schedule of the Gatun Woman's Club: January 2, business meeting and current events, the president as leader; January 22, under the art and literature department, an exhibition of the Federation pictures.

On January 2, the Empire Woman's Club will hold an open meeting for women in the Commission clubhouse when a lecture on "Health and what we know about it" will be delivered by Dr. A. J. Orenstein, chairman of the Canal Zone Committee of the Public Health Education section of the American Medical Association. The lecture will be illustrated with lantern slides.

Meetings of the Ancon Study Club have been suspended for two weeks. The next meeting will be at the home of Mrs. Mark White, Tivoli district, on Thursday, January 2. A study of the American dramas will be included in the next period of work, and a review of American history is also contemplated. The club will hold its annual meeting on January 24.

Church Societies.

The Ladies Auxiliary to the Empire Christian League held its semi-annual meeting with election of officers in the Commission chapel on Friday afternoon, December 20. During the past six months there have been six meetings for study and six social meetings. The affairs of the society have been conducted by committees appointed by the president under the following leaders: Membership, Mrs. Peek and Mrs. Young; Lookout, Mrs. Helmer and Mrs. Conner; Study, Mrs. Kelly and Mrs. Fuller; Music, Mrs. Glaw and Mrs. Wright; Thankoffering, Mrs. Drake. The plans for the study were under the direction of the two vice presidents. Mrs. Kelley took charge of the program, and Mrs. Fuller made the chart outlining the principal features of the Oriental religions. The following studies were taken in order: Confucianism,

Animism, Buddhism, Mormonism, Hinduism and Mohammedanism. The Burma series of pictures, maps, and selected literary articles were used. Several original papers were read and helpful discussions were held at the close of each meeting. On September 6 a supplementary program of plays and dialogues dealing with Oriental life was presented by members of the society. On October 25, a missionary convention was held, members of all the church organizations in the Canal Zone being present. A "Home bake sale" was held at the Commission clubhouse on December 7, the proceeds of which amounted to \$11.75. Gifts for missionary work were presented to Mrs. Stephen Witt of Gatun and to Miss Annie Coop. The officers elected for the ensuing six months were: Mrs. Nellis, president; Mrs. Kelly, first vice-president; Mrs. Stanton, second vice-president; Mrs. Drake, secretary-treasurer. The membership of the auxiliary is 25.

Following the business session the president introduced Miss Annie Coop who spoke on her missionary work among Indian tribes of Central America and of her recent efforts to establish a school in the territory of the San Blas tribe.

Church Notes.

On Sunday, December 22, the Baptist Sunday school at Culebra held its anniversary celebration. The Rev. Aquila Lucas was the preacher in the morning.

The offering of the Baptist mission throughout the Canal Zone for Sunday, December 22, will be forwarded to Jamaica for the relief of the sufferers in the hurricane district.

Watch meeting will be held in all the missions for West Indians on New Year eve. The religious service will begin at about 11 o'clock and close with the ringing of the bells announcing the new year. On such occasions the churches are crowded to their utmost capacity.

The Gatun Sunday school started a campaign in September to increase the membership, and the results have been so far satisfactory that the enrollment has increased one hundred per cent. One of the features of the campaign is the adoption of the cross and crown pin system; for regular attendance for three months a pupil receives a silver pin; at the end of a second consecutive period of three months, the silver pin is exchanged for a gold one, which is the property of the winner. In addition to this, prizes are offered to the pupils bringing one new member and to the pupil bringing in the largest number of new scholars within three months. The first period ends at Christmas time, and the awards will be given before the new year. The officers of the school are Mr. Frank Gardener Smith, superintendent; Mr. L. B. Hasting, assistant superintendent; Mr. M. W. Windes, secretary; Miss Carkeet, assistant secretary; Mr. George McFarland, librarian; Mrs. Logan, pianist. The teachers are Messrs. Hincky and Woolworth, Mrs. Hanna, Mrs. Bath, Mrs. Carkeet, Mrs. Logan, and Mrs. Witt. The community of Gatun held a reception in honor of the Rev. Charles O. Purdy and Mrs. Purdy in the Commission clubhouse on Wednesday evening, December 11. There was a short program of musical numbers and addresses were made by the Rev. Henry A. Brown, Mr. W. B. Childers, and Mr. Harry Ruckert. The reception followed, refreshments being served.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

Miss MacLaren's engagements for the balance of her tour are as follows:

Monday, December 30, Paraiso; Tuesday, December 31, Pedro Miguel; Thursday, January 2, Corozal; Friday, January 3, Gatun; Saturday, January 4, Cristobal; Sunday January 5, Gorgona; Monday, January 6, Empire; Tuesday, January 7, Culebra.

Miss MacLaren will sail for New York on the steamer *Alianza*, on January 8.

Fireproof booths for inclosing the moving picture machines, are being installed in the clubhouses on the Isthmus.

Moving picture entertainments for the week of December 30 to January 4, are as follows: Monday, Gorgona; Tuesday, Gatun; Wednesday, Cristobal; Thursday, Empire; Friday, Culebra; Saturday, Corozal.

COROZAL.

The moving pictures Thursday night were shown from the new galvanized iron booth.

The wrestling class started Monday, December 23. The Christmas evening entertainment was given by the Sunday school.

Wednesday, December 25 is to be open house at the Corozal clubhouse.

CULEBRA.

One hundred and twelve people attended the moving picture show on Saturday night December 21. Miss Lynch played the piano.

A pool tournament will be started in the near future. Those desiring to enter may register with either Mr. Dougherty or Mr. Kersey. A duckpin tournament will start on January 2. Entries may be handed to either of the supervisors.

EMPIRE.

The rag time duckpin bowling tournament that started on December 13 has 35 entries. The following men have made scores over 105 during the past week: Rodeighiro—108, 119, 106, 109, 142; Giavolli—107, 116; Pinney—110, 106, 118; Potter—109, 112, 106; Edwards—106; Johnson—114; Smith—109; Brown—118; Thorpe—106; Gorham—125, 108, 106; Huson—113; Peason—117; Dryden—109; Lippert—109. The high team score was made by Rodeighiro and Huson when they made 646 pins in three hgames.

Sixteen men have entered the December handicap pool tournament.

The third number of the Forum was given Sunday evening, December 22, when Mr. Childers of Gatun spoke on "Natural law in the World of Labor." The Gorgona Y. M. C. A. Chorus furnished the music.

A rag time duckpin tournament will be started for the boys.

GORGONA.

The following is the standing of the tournament in the local bowling:

	Won	Lost	P. C.
Roper.....	19	2	904
Powell.....	16	8	667
Sims.....	12	6	667
Gibbart.....	8	4	667
Shires.....	4	2	667
Keppler.....	15	9	625

The following are the high scores for the week:

Big pins -Roper, 232; Keppler, 200. Duckpins—King, 118, 107, 116; Davis, 112; Sims, 104.

A smoker for the men is being planned for December 31.

GATUN.

The first lecture of the course on first aid to the injured was given on Thursday evening, December 19. The second lecture will be given on December 26.

Entries for the three-cushion billiard tournament which will begin on December 26, may be given to either the secretary or Mr. DePoorter.

The A. B. C. class pool tournament will be started on January 2.

Membership in the married men's gymnasium class has increased to 12. The class has a volley ball team which is open for challenges.

G. E. Swallow will receive a medal for third high average for the Isthmian tenpin tournament and another medal for high average of the Gatun team.

Winners of the senior athletic contest are: First prize, gold medal, P. L. Martinoff; second prize, silver medal, John Loulan; third prize, bronze medal, Harman Straub.

Several parts of the interior of the building are being repaired.

CRISTOBAL.

On Saturday night the monthly married folks' Bowling tournament was held with 16 playing: The first game was duck pins, the second candle pins and the third ten pins with small balls.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning December 23, 1912:

FRESH MEATS.		Price.
Mutton—Stewing per pound.....	6	
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9	
Entire forequarter (not trimmed, 10 pound and over), per pound.....	8	
Leg (8 to 10 pounds), per pound.....	17	
Cutlets, per pound.....	18	
Short cut chops, per pound.....	20	
Lamb—Stewing, per pound.....	6	
Entire forequarter, neck trimmed off, per pound.....	9	
Leg (5 to 8 pounds), per pound.....	20	
Chops, per pound.....	24	
Cutlets, per pound.....	24	
Veal—Stewing, per pound.....	10	
Shoulder, for roasting (not under 4 pounds), per pound.....	12½	
Chops, shoulder, per pound.....	16	
Chops, per pound.....	24	
Loin for roasting, per pound.....	24	
Cutlets, per pound.....	28	
Pork—Loin chops or roast, per pound.....	16	
Beef—Suet, per pound.....	2	
Soup, per pound.....	5	
Stew, per pound.....	8	
Plate, per pound.....	9	
Corned, No. 1, per pound.....	14	
Corned, No. 2, per pound.....	12	
Chuck roast (3 pounds and over), per pound.....	12	
Pot roast, per pound.....	15	
Rib roast, second cut (not under 3½ pounds), per pound.....	16	
Rib roast, first cut (not under 3 pounds), per pound.....	18	
Sirloin roast, per pound.....	19	
Rump roast, per pound.....	19	
Porterhouse roast, per pound.....	20	
Steak, chuck, per pound.....	12½	
Round, per pound.....	13	
Rib, per pound.....	18	
Sirloin, per pound.....	19	
Rump, per pound.....	19	
Porterhouse (not less than 1½ pounds), per pound.....	20	
Tenderloin (Western), per pound.....	30	
Vension (Imported), Stew, per pound.....	6	
Forequarter (not under 6½ pounds), per pound.....	9	
Rack (not under 5½ pounds), per pound.....	20	
Saddle (not under 7½ lbs.), per pound.....	20	
Leg (not under 9 pounds), per pound.....	20	
Chops, per pound.....	24	
Cutlets, per pound.....	24	
MISCELLANEOUS.		
Pate de Foie Gras, jar.....	55	
Livers—Beef, per pound.....	11	
Calif, each.....	60	
Half, each.....	30	
Steak Hamburger, pkg.....	13	
Sausage—Bologna, per pound.....	11	
Frankfurter, per pound.....	12	
Lieberwurst, per pound.....	13	
Devonshire Farm, per pound.....	19	
Sweetbreads—Beef, per pound.....	30	
Eggs, fresh, dozen.....	40	
one-half dozen only.....	20	
Bluefish, per pound.....	15	
Halibut, fresh, per pound.....	15	
Salmon, fresh, per pound.....	22	
Oysters, quarts, per keg.....	160	
Shad, fresh, each.....	50	
Roes, shad, pair.....	25	
POULTRY AND GAME.		
Chickens—Fancy roasting, milk fed, large, each.....	1.40	
Fancy roasting, milk fed, med., each.....	1.10	
Fancy roasting, corn fed, about 5½ pounds each.....	1.25	
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00	
Fowls, each.....	1.60, 70, 80, 90.....	1.00
Ducks, (Western, about 4½ pounds) each.....	1.25	
Broilers, milk fed, each.....	70	
Broilers, corn fed, each.....	60	
Turkeys, per pound.....	26	
Squabs, each.....	35	
Capons, each.....	2.10	
Ducks, blackhead, pair.....	60	
teal, pair.....	50	
Partridges, pair.....	1.30	
Grouse, per pair.....	1.30	
Pheasants, per pair.....	1.30	
CURED AND PICKLED MEATS.		
Ham—German, Westphalia, per pound.....	36	
Sugar cured, per pound.....	20	
Sliced, per pound.....	22	
Half, for boiling, per pound.....	21	
Boiled, per pound.....	28	
Hocks, per pound.....	28	
Beef, salt family, per pound.....	12	

Price.

Bacon—Breakfast, whole piece, per pound....	25
sliced, per pound.....	23
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00
Pigs' feet, per pound.....	9
Tongues, per pound.....	18

DAIRY PRODUCTS.

Butter—Creamery, special, per pound.....	140
Sheffield Farms, extra fancy, per lb....	46
Cheese—Philadelphia cream, cake.....	10
Young America, per pound.....	45
Edam, each.....	22
Edam, per pound.....	28
Parmesan, per pound.....	1.00
Edam, tin.....	35
Gouda, per pound.....	26
Snappy, cake.....	34
Milk (Certified), per bottle.....	10
Fer-mil-lac, quart.....	20
Ice cream, bottle.....	25
1 gallon.....	50

VEGETABLES AND FRUITS.

Beets, per pound.....	3
Celery, per head.....	6
Cabbage, per pound.....	3
Cucumbers, per pound.....	8
Carrots, per pound.....	3
Cauliflower, per pound.....	12
Lettuce, per pound.....	12
Onions, per pound.....	3
Parsley, per bunch.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	3
Peppers, green, per pound.....	15
Romaine, per pound.....	10
Squash, per pound.....	3
Turnips, per pound.....	3
Yams, per pound.....	3
Apples, per pound.....	4
Cranberries, per pound.....	10
Grapes, Spanish, per pound.....	12
Grape fruit, each.....	4
Lemons, dozen.....	24
Limes, per 100.....	80
Pears, per pound.....	8
Oranges, Jamaica, per dozen.....	12

*Indicates reductions from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advances on last list.
††Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock supply next lightest weight is supplied and refund note sent for difference.
‡Sold only from Commissaries; no orders taken for delivery.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon during the week ending December 21:

Colon, December 15, from New York, with 15 cases machine parts, for Pacific Division; 19 reels cable for superintendent of erection; 10 cases machinery, 45 cases soap, 25 barrels plaster, for Mechanical Division; 16 cases solder, 50 kegs wire nails, 680 bundles galvanized roofing iron, 117 rolls wire fencing, 198 barrels fire clay, 125 cases ink and mucilage, 56 kegs rivets, 50 kegs washers, 160 drums paint, 25 crates stoves, for stock; and a miscellaneous cargo, the whole consisting of 1,860 packages, weighing 200 tons.

Imperator, December 15, from Mobile, with 7,500 pieces cross ties, for stock.

Twines, December 15, from New York, with 1,471 bales hay, 10 cases hardware, 9 cases rubber hose, 11 cases packing, 29 cases pipe fittings, for stock; 7 reels cable, 39 cases electrical material, for superintendent of erection.

Isle of Jura, December 16, from New York, with 125,821 bags of cement, for Atlantic and Pacific Divisions; 10 cases benzine, for stock.

Cristobal, December 17, from New York, with 450 kegs wire nails, 12 barrels creosote oil, 9 cases crockery for stock; 50 barrels car wheels, for Mechanical Division; 9 cases rubber boots, for Pacific Division; 50 reels copper wire, 97 cases electrical material, for superintendent of erection; 150,005 bags cement, for Atlantic and Pacific Divisions.

Prinz Sigismund, December 17, from New York, with 16 drums lime, 34 crates brooms, 10 kegs bolts, 6 cases hardware, for stock.

Zacapa, December 18, from New York, with 131 barrels insulators, 11 crates refrigerator parts, for Panama Railroad Company; 5 pieces castings, for Mechanical Division; 85 cases machinery for superintendent of erection; 36 bales life preservers, 10 cases hardware, for stock.

Parismina, December 19, from New Orleans, with 9 cases car parts, 153 packages, castings, 324 tons pig iron for Mechanical Division; 163 barrels brick, 49 cases wash bowls, for Panama Railroad Company; 1,832 pieces lumber 232 pieces piling, 851 bales hay, 200 packages switch stands, for stock.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Panama.....	P. R. R.	Friday.....	Dec. 20
Allianca.....	P. R. R.	Friday.....	Dec. 27
Colon.....	P. R. R.	Friday.....	Jan. 3
Advance.....	P. R. R.	Thursday.....	Jan. 9
Panama.....	P. R. R.	Wednesday.....	Jan. 15
Allianca.....	P. R. R.	Tuesday.....	Jan. 21
Colon.....	P. R. R.	Tuesday.....	Jan. 28
Advance.....	P. R. R.	Monday.....	Feb. 3
Panama.....	P. R. R.	Monday.....	Feb. 10
Allianca.....	P. R. R.	Saturday.....	Feb. 15
Colon.....	P. R. R.	Friday.....	Feb. 21
Advance.....	P. R. R.	Friday.....	Feb. 28
Panama.....	P. R. R.	Friday.....	Mar. 6
Allianca.....	P. R. R.	Wednesday.....	Mar. 12
Colon.....	P. R. R.	Tuesday.....	Mar. 18
Advance.....	P. R. R.	Tuesday.....	Mar. 25
Panama.....	P. R. R.	Monday.....	Mar. 31
Allianca.....	P. R. R.	Saturday.....	Apr. 5
Colon.....	P. R. R.	Saturday.....	Apr. 12
Advance.....	P. R. R.	Saturday.....	Apr. 19
Panama.....	P. R. R.	Friday.....	Apr. 26
Allianca.....	P. R. R.	Thursday.....	May 1
Colon.....	P. R. R.	Wednesday.....	May 7
Advance.....	P. R. R.	Tuesday.....	May 13
Panama.....	P. R. R.	Tuesday.....	May 20
Allianca.....	P. R. R.	Monday.....	May 26

CRISTOBAL TO NEW YORK.

Advance.....	P. R. R.	Thursday.....	Dec. 26
Panama.....	P. R. R.	Thursday.....	Jan. 2
Allianca.....	P. R. R.	Wednesday.....	Jan. 8
Colon.....	P. R. R.	Wednesday.....	Jan. 15
Advance.....	P. R. R.	Tuesday.....	Jan. 21
Panama.....	P. R. R.	Tuesday.....	Jan. 28
Allianca.....	P. R. R.	Sunday.....	Feb. 2
Colon.....	P. R. R.	Sunday.....	Feb. 9
Advance.....	P. R. R.	Saturday.....	Feb. 15
Panama.....	P. R. R.	Saturday.....	Feb. 22
Allianca.....	P. R. R.	Friday.....	Feb. 28
Colon.....	P. R. R.	Saturday.....	Mar. 8
Advance.....	P. R. R.	Wednesday.....	Mar. 12
Panama.....	P. R. R.	Tuesday.....	Mar. 18
Allianca.....	P. R. R.	Monday.....	Mar. 24
Colon.....	P. R. R.	Sunday.....	Mar. 30
Advance.....	P. R. R.	Monday.....	Apr. 7
Panama.....	P. R. R.	Saturday.....	Apr. 12
Allianca.....	P. R. R.	Friday.....	Apr. 18
Colon.....	P. R. R.	Thursday.....	Apr. 24
Advance.....	P. R. R.	Thursday.....	May 1
Panama.....	P. R. R.	Wednesday.....	May 7
Allianca.....	P. R. R.	Tuesday.....	May 13
Colon.....	P. R. R.	Monday.....	May 19
Advance.....	P. R. R.	Monday.....	May 26
Panama.....	P. R. R.	Sunday.....	June 1
Allianca.....	P. R. R.	Saturday.....	June 7

NEW YORK TO COLON.

Oruba.....	R. M.	Saturday.....	Dec. 21
Prinz Eitel Friedrich.....	H.-A.	Saturday.....	Dec. 21
Prinz August Wilhelm.....	H.-A.	Saturday.....	Dec. 28
Prinz Sigismund.....	H.-A.	Saturday.....	Jan. 4
Prinz Joachim.....	H.-A.	Saturday.....	Jan. 11

COLON TO NEW YORK.

Arcadian.....	R. M.	Tuesday.....	Dec. 24
Prinz Joachim.....	H.-A.	Monday.....	Dec. 30
Prinz Eitel Friedrich.....	H.-A.	Monday.....	Jan. 6
Prinz August Wilhelm.....	H.-A.	Monday.....	Jan. 13

NEW ORLEANS TO COLON.

Saramacca.....	U. F. C.	Wednesday.....	Dec. 18
Abangarez.....	U. F. C.	Saturday.....	Dec. 21
Heredia.....	U. F. C.	Wednesday.....	Dec. 25
Atenas.....	U. F. C.	Saturday.....	Dec. 28

COLON TO NEW ORLEANS.

Parismina.....	U. F. C.	Thursday.....	Dec. 26
Saramacca.....	U. F. C.	Thursday.....	Dec. 26
Abangarez.....	U. F. C.	Thursday.....	Jan. 2
Heredia.....	U. F. C.	Thursday.....	Jan. 2

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers for New York, via Kingston and Santiago de Cuba, sailing every Monday, leave alternately at 10 a. m. and 2 p. m.; the *Prinz Joachim* and the *Prinz August Wilhelm* at 2 p. m., and the *Prinz Sigismund* and the *Prinz Eitel Friedrich* at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, JANUARY 1, 1913.

No. 19.

The Canal Record

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Address all Communications,
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Excavation at Balboa Dry Dock.

A steam shovel has started excavation for the entrance basin and Dry Dock No. 1 at Balboa. The first cut began adjacent to the site of the permanent coaling plant, and the shovel is working northward across what will be the entrance basin to the axis of the Dry Dock and will thence proceed parallel to the length of the Dry Dock to its head. As excavation equipment becomes available by release from other portions of the work from time to time, other shovels will be added. The excavation for Dry Dock No 1 and the entrance basin includes about 750,000 cubic yards of rock and 500,000 cubic yards of earth. The spoil will be used to fill in the low ground behind the commercial piers, which will be the site of the permanent yard of the Panama Railroad.

Timbers for Lock Fenders.

Timber for the fenders in the approaches to the locks has arrived on the Isthmus, and will be treated with preservative before it is installed. In all 551,312 board feet, in sticks 12 by 16 inches and 16 feet long, will be required, and the first shipment is about 200,000 feet. In THE CANAL RECORD of October 11, 1911, there was an article about the fenders, together with illustrations. At that time it was the intention to use oak for this purpose, but the cost of both oak and yellow pine was so great that bids were asked including Douglas fir. This wood has been selected at a price of \$34.30 a thousand board feet.

Before it enters a lock, a ship will come to a stop alongside the center guide wall, where electric towing locomotives take it in tow for the passage through the locks. The fenders are designed to absorb the shock caused by the ship bumping against this wall. There will be two rows of fenders running longitudinally along the walls, the upper one 2 feet 6 inches from the top of the wall, and the lower one 7 feet 6 inches below this. At every five feet there will be a nest of

springs in the wall against which the timbers will bear.

The climate and insects in Panama are very destructive of wood. As preservative against these attacks, the fender timbers will be treated with *Avanarius carbolineum*, a liquid compound of oily nature. A tank 4 feet square in cross section and 20 feet long constructed at Gorgona shops has been erected at Miraflores for this purpose. Within the tank is a coil through which hot steam will be circulated, bringing the liquid up to a temperature of 190 Fahrenheit. The timbers will be immersed in this hot liquid, nine at a time, and allowed to remain in it thirty minutes. It is estimated that from 72 to 81 timbers can be treated in a day of eight hours.

Miraflores Spillway.

Of the 80,000 cubic yards to be excavated for the construction of Miraflores Spillway, 42,276 cubic yards, or 23.6 per cent, had been removed on December 1; included in this are 9,896 cubic yards of hydraulic excavation, which was completed in October. The placing of concrete will begin as soon as excavation is sufficiently advanced. The Spillway is to be 432 feet long, extending with connection by core walls from the north end of the east side wall of Miraflores Locks, across the Rio Grande and the construction tracks following the old line of the Panama Railroad, to the hill north of the Miraflores power plant. The crest of the ogee will be 38.67 feet above sealevel, and the piers to support the gates and the connecting footbridge, will be at elevation 85.17. The gates will be eight in number, regulating the 45-foot openings between piers, and will be similar in construction and operation to those now ready for installation in the Gatun Dam Spillway.

Conditions in Culebra Cut.

Lettering has been placed along the banks, on signboards or the face of the bluffs, to indicate levels which were indices of progress in excavation or to show the level at which the water will stand when the Canal is in operation. On some of the steamshovels at important points are placards which give the elevation. These are changed as the shovels reach lower levels.

No heavy slides have occurred within the last two months, the most important movement during that period having been a fresh break in the Cucaracha slide. This began moving about a month ago and is still in motion. About 50,000 cubic yards are in motion and this is less than the amount estimated as likely to move after the quiescence into which the slide had settled.

The removal of spoil from all the active slides is advancing without difficulty. Excavation at the foot of the slide in the east bank, half a mile north of Empire, which on August 20, 1912 carried away a section of the

Obispo Diversion and blocked the drainage channel in the bottom of the Cut, has advanced to such an extent that a new ditch was opened through the toe of the slide last week and the water now follows its former natural drainage toward the pumps at Gamboa dike. The three centrifugal pumps and one submerged air pump, which had been installed on the upstream side of the obstruction to lift the water over the toe to natural drainage, have been removed.

At the north end of the Cut, where a dike has been protecting it from the waters of the Comacho and Mandingo Rivers, which flow into the Chagres through the West Diversion, considerable leakage developed recently with the backing up of Gatun Lake. This dike was a fill of rock and earth, thrown across the old channel of the Obispo by the French canal workers, and proved to be porous under pressure. In order to stop the seepage clay was dumped along the outer face. At about the same time the waters of the lake began to recede, following the opening of the sluice gates in Gatun spillway, and under this dual influence the leakage has practically ceased.

Excavation at Gatun Locks.

A steamshovel began excavating in the lower approach to Gatun Locks on December 23, in rock, at elevation 41, in the west chamber. On the east side the material at that elevation is too soft for the use of steamshovels, and is being removed by sluicing and by a clamshell dredge dumping into buckets carried by the duplicate cableways. Following the excavation by dredges in the lower approach, and the unwatering of the lagoon, the embankments on either side were strengthened to support the cableway towers, a pair of which have been moved down a hundred feet beyond the end of the locks proper. They have been used in placing part of the concrete for wing and cut-off walls on both sides, in connection with narrow-gage dump trains and chutes. No concrete has been placed for the center approach wall, foundation piles for part of which are being driven to rock by four pile-drivers.

New Railroad Time Table.

A new schedule of the trains on the Panama Railroad is published on another page of this issue.

In the weekday trains, that from Colon to Panama in the afternoon will leave at 4.25 instead of 4.35 o'clock; and the early morning train will leave Colon at 5.30 instead of 5.10 o'clock. There is a general reduction of 10 minutes in the time of all trains from Colon to Panama. The late train on "Saturday night" will leave Colon at 12.15 Sunday morning.

In the Panama to Colon schedule the important changes for the weekday trains are that the morning trains, leave at 6.40 and

NOTES OF PROGRESS.

(Continued.)

10.10 o'clock respectively instead of 6.35 and 10.20. The late afternoon train leaves at 5.15 instead of 5.25. The evening train on Saturday leaves at 6 o'clock instead of 7.30.

Notice to Mariners.

It is dangerous to pass the drillboat *Terrier* in the channel excavation of the Atlantic Division when the one-ball signal is

up, this signal being hoisted for 20 minutes before a shot is fired. A red flag is hoisted at all times that there is dynamite aboard the drillboat or tending barge.

Gatun Dam Spillway

The concrete work in the Spillway at Gatun Dam is over 93 per cent completed, 211,565 cubic yards, out of a total of 225,000, having been placed at the close of work on December 28. A statement of the amount laid each

working day last week, and of the total in place, follows:

DATE.	Concrete laid.	Hours worked.	No. mixers used.
	Cu. Yds.		
December 16.....	88	6.00	1
December 17.....	24	1.05	1
December 18.....	38	4.00	1
December 19.....			
December 20.....	160	7.75	1
December 21.....	172	7.00	1
Total.....	482	26.25	1
Previously reported...	209,955		
Week ended Dec. 28..	1,128		
Grand total.....	211,565		

CONCRETE WORK IN THE LOCKS.

Over 94 per cent of the total of 4,446,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on December 28, the amount in place being 4,189,059 cubic yards. The statement of concrete work was omitted from last week's CANAL RECORD because it arrived too late for publication.

GATUN LOCKS.

Over 93 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on December 28 being 1,912,425 cubic yards, out of a total of 2,043,730. A statement of the amount placed in the locks each working day of the week ending December 28, and of the total, follows; and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers.	Concrete placed.	Hours worked.	No. of mixers.		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
December 23.....	110	1.84	2					110
December 24.....	597	9.94	2					597
December 25.....								
December 26.....	316	5.26	2					316
December 27.....	698	11.64	2					698
December 28.....	300	5.00	2					300
Total.....	2,021	33.68	2					2,021
Previously reported.....								1,912,425
Grand total.....								1,914,446

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 99 per cent completed, 900,929 cubic yards, out of a total of 903,000, bucket measurement, having been placed at the close of work on December 28. In the week ending December 21st, 1,900 cubic yards were placed. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.					
December 23.....				300	30.00	4			300
December 24.....				285	32.50	5			285
December 25.....									
December 26.....				216	24.00	3			216
December 27.....				184	26.00	4			184
December 28.....				335	32.50	5			335
Total				1,320	145.00	4.2			1,320
Previously reported....								4,493	899,609
Grand total.....								4,493	900,929

MIRAFLORES LOCKS.

Over 91 per cent of the concrete for the system of two twin locks at Miraflores was in place December 28, the total amount on that date being 1,375,705 cubic yards, bucket measurement, out of a total of approximately 1,499,800. During the week ending December 21st, 11,908 cubic yards were placed. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 1-cubic yard mixers.			1-cubic yard mixers.			Mixed by hand.	Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers.	Concrete placed.	Hours worked.	No. of mixers.	Concrete placed.	Hours worked.	No. of mixers.			
	Cu. Yds.			Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.
December 23.....	1,620	37.50	8	199	15.00	2	104	12.00	2			1,923
December 24.....	2,004	46.00	8	87	5.50	1	72	7.00	1			2,163
December 25.....												
December 26.....	1,046	22.83	8				55	7.00	1			1,101
December 27.....	2,004	43.50	8				78	10.00	1			2,082
December 28.....	1,858	38.00	8	81	4.50	1	84	10.00	1			2,023
Total.....	8,532	187.83	8	367	25.00	8	393	46.00	1.2			9,292
Previously reported.....											3,693	1,366,413
Grand total.....											3,693	1,375,705

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the two weeks ending December 28:

DATE	Hours worked.	Cubic yards.
December 16.....	7.40	1,913
December 17.....	7.25	2,135
December 18.....	7.25	1,864
December 19.....	8.35	2,467
December 20.....	7.25	2,332
December 21.....	8.20	2,148
Total.....	46.50	12,859
December 23.....	6.25	1,900
December 24.....	8.30	2,392
December 25.....		Holiday
December 26.....	8.30	2,352
December 27.....	8.20	2,575
December 28.....	8.00	2,690
Totals.....	39.45	11,909

Rainfall from December 1 to 28, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
	Ins.		Ins.
Pacific Section—			
Ancon.....	.69	15	2.12
Balboa.....	.80	15	3.09
*Miraflores.....	.89	4	2.71
Pedro Miguel.....	1.26	15	3.28
Rio Grande.....	.58	15	2.56
Central Section—			
Culebra.....	.83	11	2.91
*Camacho.....	.58	1	2.50
Empire.....	.65	4	2.23
Gamboa.....	1.15	10	3.50
*Juan Mina.....	.38	16	1.43
Alhajuela.....	.39	16	1.28
*El Vigia.....	.28	9	.87
*Gorgona.....	1.10	15	4.32
*Frijoles.....	.90	15	4.98
*Monte Lirio.....	1.50	16	4.84
Atlantic Section—			
Gatun.....	2.25	16	8.54
*Brazos Brook.....	1.80	15	9.14
Colon.....	2.20	15	10.32
†Porto Bello.....	2.14	10	17.51
*Standard rain gage—readings at 5 p. m., daily.			
Automatic rain gage at unstarred stations—values midnigh to midnight. †To 5 p. m., December 27.			

ATLANTIC TERMINAL DOCKS.

Quay at Dock No. 16 Completed—Progress on Pier No. 17.

Ships wishing to come into dock at the Atlantic entrance to the Canal will turn east at right angles into a 500-foot channel leading up to the terminal piers and quays. Authority for excavating this lateral channel to a depth of 41 feet below mean sealevel was issued last week, and the work will be done by the suction dredge *Caribbean* and the dipper dredge *Mindi*. It will involve about 942,000 cubic yards of excavation, and additional work in the docks alongside the quays and pier will involve about 100,000 cubic yards.

Work on the terminals is advancing rapidly. The quay wall along the west front of Cristobal Point is completed, the mole that extends from the mainland out towards the Canal and at right angles to it is made to its full length, although much material must yet be dumped to bring it to its final width; and the caissons for the foundation of Pier No. 17 are practically in place. At the head of Dock No. 16, between the quay and Pier 17, is a landing for small boats, its top being only three feet above mean tide. This will be ready for use when the first ships of the Atlantic Fleet of the United States Navy arrive at Colon in January.

The plan for the terminal wharves is to build a quay around the point at Cristobal, extend a fill of rock and earth from the mainland 3,200 feet towards the Canal channel, and from this mole build out piers at such distances apart as to allow a berth or dock between piers of 300 feet in width.

At this time of the year winds from the northward enter Limon Bay and toss its waters so much that white caps are the rule rather than the exception. The west breakwater, extending from Toro Point towards the Canal entrance, cuts off the heaviest of the waves, but it does not entirely protect the harbor. The mole, whose chief use is that of a backbone for the system of piers, answers as a breakwater for the area immediately behind it. Although the water in front of this is so wind-tossed that it actually breaks over the mole and splashes to a height of twenty feet or more, that behind it is calm. In this calm water the entrance to the docks from the Canal will be dug.

The quay along Dock No. 16 is typical in construction and appearance of what Pier No. 17 will be. Both quay and pier are founded upon bed rock, from twenty to eighty feet below mean tide at various points. Steel caissons or cylinders are driven by pile drivers into the bottom of the bay, and men within them take out the earth and coral rock as the caissons sink. When bed rock is reached, it is leveled off so that each caisson may stand on a flat surface. Old railroad rails are placed within the cylinder to serve as reinforcement, and the whole is filled with concrete. The result is a concrete pillar, steel bound and heavily reinforced with T-rails, standing on rock.

A series of these pillars forms the foundation for a quay or pier. Upon, and joining them, are placed steel girders, and these are joined in turn by smaller steel forms, so that a network of steel overlies the pillars. Upon this network the concrete for the floor is placed, and upon this are laid brick, the railroad tracks along the face of the quay

and faces of the pier having first been set in place.

The quay at Dock No. 16 is completed. It stands upon 227 piers of concrete each 4 feet in diameter. In its construction 11,391 linear feet of caissons were sunk, 4,894 cubic yards of concrete were used in the foundation piers, and 3,182 cubic yards in the floor, which is 8 inches thick. Its length is 1,071 feet, width 75 feet, 6 inches. Along the front a line of batter piles is being driven to protect the structure against ships. A shed of steel will cover it, and the work on this will begin in April.

Pier No. 17 is now in the most interesting stage of its construction. Caissons are being sunk, excavation is in progress, concrete filling of the caissons is carried on, and the steel superstructure for the floor is about to be placed. This pier will be 1,042 feet long, 209 feet wide, and will rest upon 287 piers of reinforced concrete each 6 feet in diameter.

Dredging in the 300-foot slip between Dock 16 and Pier 17 is complete, and the dredge *Mindi* will move to the west side of Pier 17 in a few days to dredge out a 200-foot berth.

The dredge *Caribbean* will start next week to dredge out a 500-foot approach channel from the Canal axis to Dock 16.

There has been some question in regard to the cross currents in Limon Bay, carrying the silt into the approach channel, and the hydrographic office has been instructed to make a thorough study of this phase of the problem.

Case of Sunstroke.

The third case of sunstroke or thermic fever on the Isthmus, reported by the Canal physicians during the eight and one-half years of American work, occurred on December 5 at Miraflores locks. An Italian laborer who had been on the Isthmus only ten days was stricken at 4 o'clock in the afternoon after he had completed ten hours of work. He was taken in charge by the police and hurried to the dispensary. It was believed that he could not live. He was subjected at once to the customary remedies for sunstroke. Under treatment his temperature was reduced, and in the evening he was sent to Ancon Hospital where improvement continued. It is believed that he will make a complete recovery.

Visit of the Atlantic Fleet.

The Atlantic Fleet of the United States Navy which will visit Colon for the purpose of allowing its officers and men to inspect the Canal, will arrive in four divisions, according to the following schedule:

The Second Division commanded by Rear Admiral F. F. Fletcher, and consisting of the *Vermont*, *Michigan* and *South Carolina*, with 173 officers and 3,484 men, will arrive on January 12 and sail on January 17. It will be accompanied by the Fourth and Fifth Groups of destroyers, with 30 officers and 820 men. In the Fourth Group are the *Monaghan*, *Ammen*, *Burrows*, *Patterson*, and *Trippe*, and the Fifth Group is composed of the *Jenkins*, *Fanning*, *Jouett*, *Jarvis*, and *Beale*.

The Commander in Chief of the Atlantic Fleet, Rear Admiral Charles J. Badger, on the *Wyoming*, will arrive on January 20, together with the First Division, commanded by Capt. W. S. Benson. The First Division is made up of the *Utah*, *Florida* and *North*

Dakota and will be accompanied by these destroyers: First Group, *Roe*, *Drayton*, *McCall*, *Paulding*, and *Terry*; Third Group, *Henley*, *Sterrett* and *Warrington*, with the tender *Dixie*, bearing Capt. E. W. Eberle, Commander of the Torpedo Flotilla. These ships will depart on January 25. They carry a total of 177 officers and 3,710 men.

The Third Division, made up of the *Virginia*, *Georgia*, and *Nebraska*, under Rear Admiral N. R. Usher, will arrive on January 27 and sail on February 1. In this division are 113 officers and 2,616 men.

The Fourth Division, arriving February 4 and sailing February 9, consists of the *Minnesota*, *Ohio*, and *Idaho*, commanded by Rear Admiral F. E. Beatty, with 111 officers and 2,450 men.

Levelmen and Transitman.

An examination for promotion to the positions of levelman and transitman is scheduled to be held in the Commission clubhouse at Empire, on Sunday, January 26.

The examination will commence promptly at 9 a. m., and will be divided into three parts, which will be given in the order indicated, viz: Written and oral examination, and a statement of education and experience. Competitors will be required to complete the written portion of the examination before 1 p. m.

Applications for examination should be addressed to the undersigned, through the head of department or division, before the close of business on Thursday, January 23.

Applicants should bring to the examination room pens, pencils, triangles, and tables of circular functions, but no paper, ink, or blotters.

Applicants who fail to appear for examination before 9 a. m., or who do not apply for examination through the proper channels before the close of business on Thursday, January 23 will not be admitted to the examination.

No card of admission will be needed.

A. B. NICHOLS,

Chairman, Examining Board.

CULEBRA, C. Z., December 28, 1912.

Canal Zone Postal Savings Bank Transactions.

A statement of the transactions of the postal savings bank at the Canal Zone post offices from November 2 to November 30, inclusive, follows:

NAME OF OFFICE.	Postal savings certificates issued.	Postal savings certificates paid.
Ancon.....	\$8,786.00	\$4,982.00
Balboa.....	9,503.00	6,552.00
Bis Ouispo.....	1,680.00	642.00
Corozal.....	16,048.00	9,652.00
Cristobal.....	9,162.00	5,155.00
Culebra.....	8,578.00	5,758.00
Empire.....	6,292.00	4,975.00
Gatun.....	16,534.00	11,857.00
Gorgona.....	16,569.00	12,992.00
Las Cascadas.....	5,805.00	5,646.00
Matachin.....	975.00	377.00
Miraflores.....	5,001.00	3,956.00
Paraiso.....	7,145.00	5,686.00
Pedro Miguel.....	11,119.00	8,707.00
Station "A".....	150.00	100.00
Station "B".....	826.00	353.00
Total.....	124,173.00	87,390.00
Deposits on hand November 1, 1912.....	\$432,525.00	
Amount deposited November.....	124,173.00	
Amount withdrawals in November.....		\$ 87,390.00
Balance on hand.....		469,308.00
	\$556,698.00	\$556,698.00

LIGHTING CULEBRA CUT.

Channel will be Dark Except for a few Beacons.

Ships sailing through Culebra Cut at night will be guided by a system of beacons on either bank, but except for these lights, or such light as is lent by the moon and stars, the journey through the Cut will be in the dark. From the top deck of the largest ship no glimpse may be obtained of the country along this part of the Canal, for even the broad swale opposite Culebra will be high above the deck, while at the summit of the continental divide, where Gold and Contractors' Hills have been cut away to make the channel, the rock sides will tower hundreds of feet above the mastheads. This close confinement of the Canal between the hills will make for intense darkness, and at times there will be heavy fogs such as now accumulate in the Cut during the night, and are dissipated by the sun in the morning.

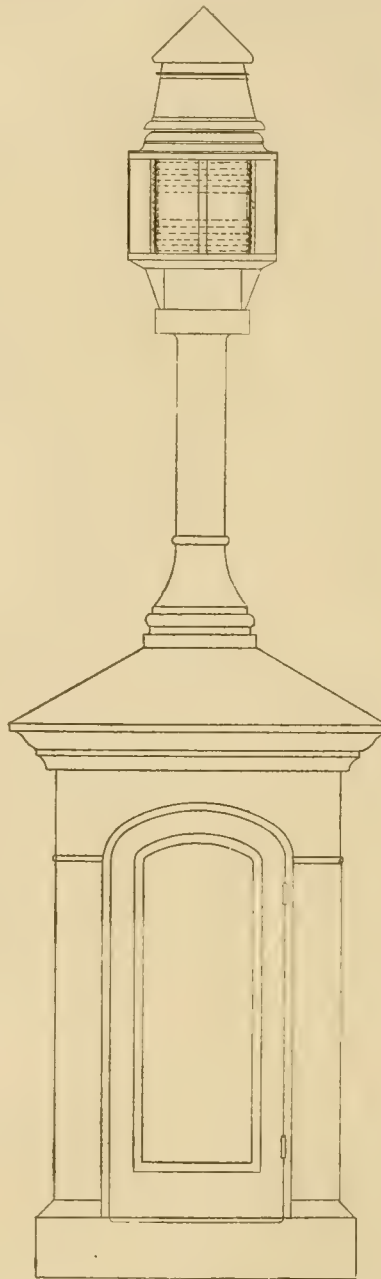
In the original project for lighting the Canal, published in *THE CANAL RECORD* of November 22, 1911, it was explained that the conditions in Culebra Cut would make impracticable the system of range lights employed on the lake and in the sea level channels. In this system two lights are placed one behind the other on the bank, in such relation that when the pilot gets them both in line he knows that his ship is on the right range. But the steep sides of Culebra Cut do not permit such an arrangement, because there is not room for one light to be placed behind another at sufficient distance to make them of any use as range indicators. The plan therefore is to establish three beacons at each angle in the Cut, and between these, intermediate beacons in pairs on each side of the Canal. By keeping his ship pointed midway between these beacons, the mariner will be able to adhere closely to the center of the Canal.

Steering a ship through Culebra Cut will be much like the navigation encountered in the tidal estuaries of the southern rivers where there are many turns. For the Canal does not follow a straight line through the continental divide but takes advantage of natural depressions in the land, in order that excavation may be reduced to the minimum. In all there are eight turns or angles, the sums of which represent $144\frac{1}{2}$ degrees of curvature, so that if all the turns were made at one time and in one direction, a ship in passing through the Cut would describe over one third of the arc of a circle.

Entering the Cut from the Atlantic side and going southward, the first angle occurs at Bas Obispo, where the Canal turns 30 degrees to the right. The course lies straight ahead for 9,915 feet to Las Cascadas, where there is another turn to the right of 9d 9m 26s. From this point the next turn, which is at Cunette near Empire, is a distance of 6,219 feet, and there the Canal turns to the left 29d 25m 53s. Beyond this at a distance of 2,027 feet is another turn to the left of 7d 36m 13s at Empire. Four thousand five hundred thirty-three feet beyond Empire there is a turn to the right of 22d 14m. Then comes a straightaway of 7,891 feet to Contractors Hill, and there the line turns 17d 43m to the left, and there is another straight stretch of 6,467 feet to a point near Paraiso where there is another angle of 12d 7m 30s to the left. Between this point and the forebay of the locks at Pedro Miguel is a distance

of 3,663 feet and there the line turns again to the right 16d 15m 35s.

Throughout the entire length of the Cut, with the exception of only two turns or angles, the pilot will have before him only the lights necessary to guide the ship through the tangent in which it happens to be, and will see no other aids to navigation until he reaches the next turning point. This is accomplished by screening the lights so that



BEACON FOR CULEBRA CUT.

(Reinforced concrete, Occulting Light, base to focal plane 15 feet. Width of base $4\frac{1}{2}$ feet.)

they will be seen only through a certain number of degrees of arc of the horizon.

To eliminate the possibility of confounding the lights with one another, and with lights ashore, all the beacons will have individual characteristics formed by flashes of light and dark intervals. Thus the tentative arrangement for all turning point lights on the starboard hand is a single flash whose period of flashing is three seconds; for all turning point lights on the port hand, a double flash

whose period is three seconds; for all intermediate lights marking the starboard edge of the channel an occulting light whose period of occulting is ten seconds; and for all lights marking the port edge of the channel, a double flash whose period of flashing is 8.8 seconds.

There will be 35 reinforced concrete beacons in the nine miles of Culebra Cut, 23 at tangents, and 12 at intermediate points. These have been cast at the Balboa plant of the lighthouse subdivision, in three parts—the body, the roof and the part for the lantern, and are ready to be installed as soon as the work in the Cut has advanced far enough. At present the slides make it impracticable to place the foundations for the beacons. It is proposed to make the foundations on the 95-foot berms, after the Cut is flooded, to carry the beacons in barges to the points where there are to be set up, and there to lift them from the derrick barge into position.

Reduced Rates to the Interior.

A new steamship, the *Panama*, built in Scotland, has been brought to Panama by the recently organized Panama Steamship Company and has been placed in service between Panama and David, and intermediate points. The company has made a rate for Canal and Panama railroad employees of ten per cent off on single trips and 15 per cent off on return trips to all parts touched by the *Panama*. The new ship is of 1,000 tons burthen, and is equipped with electric lights, baths, and other conveniences.

Canal Zone Rifle Club.

The final shoot of the Canal Zone Rifle Club for the individual military rifle championship of the club was held on December 22 on the Pedro Miguel range, and was won by Mr. J. A. McLellan of Corozal with a total score of 285 out of 350. The complete shoot was held on three different dates and the winner led the score at the close of each day's shoot.

Misdirected Letters.

ANCON, C. Z., January 1, 1913.

The following insufficiently addressed letters, originating in the United States or its possessions, have been received in the office of the Director of Posts and may be

Barton, Robert C.	King, Harry
Blackburn, W. H.	Knowlton, Alvey R.
Brown, Mrs. Frank	Krasensteiner, F. M. Von
Corrigan, William	Kummers, Adolf, P.
Chase, H. W.	Lyons, James
Castetta, Chas.	Martin, Fred C.
Crandall, Harry	Mather, Huda
Daley, Thomas	McBean, J. H.
Davis, Clarence	McFarlane, Simon R.
Dovell, Mrs. J. P.	Mentzer, Miss Anna
Dunn, Lawrence H.	Moons, J. C.
Edmonds, Miss Anna Mary	Morgan, Mrs.

Ernst, George	care Stanley Morgan
Eshoo, Daniel	Proskey, Paul
Fort, Tamel	Sharp, Fred
Govette, Will	Smith, Charles F.
Grant, F. N.	Spickelmire, Sargt. Vernon
Griffiths, J. T.	Taule, Mrs. John
Hanna, Mrs. Adah F.	Tebbetts, Miss Dorothy
Hobeck, A.	Thompson, C. G.
Holden, Mrs. V. A.	Tomlinson, David A.
Jasper, G. M. (4th class)	Walker, Clement

LETTERS UNCALLED FOR DECEMBER 25, 1912.

secured upon request of the addressee:	Hector, E. A.
Beall, E. (pkg.)	Kakta, Casimir A.
Cash, John H.	Navano, M.
Cataldo, George	Orol, Jose
Clarke, Thomas H. S.	Roberts, Ralph W.
Cumming, C.	Ross, J. Dunbar
Davis, Arnold (3)	Smith, Fredrick
Dewey, C. W.	Thompson, A. Blanchfield
Edwards, Mrs. H. C.	Whittle, Edward
Good, Emily N.	Wood General
Hans, W. George	Warner, Grant
Hearne, M. D., J. W.	
Heath, C. M.	

SOCIAL LIFE OF THE ZONE.

Christmas Entertainments.

It is estimated that more than 2,000 American children participated in the Christmas celebrations held in the Canal villages. The entertainments varied but little in character. A feature at the Sunday school exercises at Gatun was the showing of colored slides representing scenes in the early life of Christ. Moving pictures were also shown at Las Cascadas. At Cristobal the children were entertained by a representation of "Rebecca of Sunnybrook Farm" by Miss MacLaren. At Culebra, a treat of ice cream and cake followed the program. The pupils of the Sunday school at Bas Obispo were present at the social gathering held in the hall on Christmas eve and each received a box of candy.

The sale held at the Commission clubhouse by the Woman's Altar Guild of St. Mary's Church, Empire brought \$85 into the treasury; St. Ferdinand's three days' sale held in the parish house netted about \$400, and the same amount was made by the sale held in the girls' public school building, Colon, by the members of the parish of Christ Church. The results from the four sections of this bazaar were as follows. Panamanian, \$133.60, West Indian, \$124.25; Guatemala, \$94, American \$40.

Bishop Knight's Itinerary.

* The Rt. Rev. Albion W. Knight, Protestant Episcopal Bishop of Cuba, is expected to arrive in Colon from Havana on Wednesday, January 8, to remain on the Isthmus until January 27. His visitation to the thirteen churches of the Panama mission will be according to the following schedule: Sunday, January 12, St. Luke's Hospital chapel, Ancon, at 10 a. m.; St. Paul's, Panama, at 7.20 p. m.; Wednesday, January 15, at St. Augustine's, Paraiso, at 7.30 P. m.; Friday, January 17, at St. James, Empire, at 7.30 p. m.; Sunday, January 19, St. Mary's, Empire, 10.45 a. m., St. Philip's, Las Cascadas, 4 p. m.; St. Mark's, Culebra, 7.30 p. m.; Wednesday, January 22, St. Andrew's, Gorgona, 7.30 p. m.; Friday, January 24, St. Michael's, Pedro Miguel, 7.30 p. m.; Sunday, January 26, Gatun, 8 p. m., St. Stephen's, New Gatun, 10 a. m., Christ Church, Colon Beach, 8 p. m. On Saturday, January 18 there will be a conference of the clergy at St. Mary's Church, Empire, at 8 a. m.

The Altar Guild of St. Luke's Church, Ancon, will hold a reception in honor of the bishop at the residence of Chaplain and Mrs. Henry A. Brown, from four to six o'clock on January 14. The business meeting of the Guild will begin at four and the general reception will be from five to six o'clock. Members of the church and residents of Ancon are cordially invited to attend.

A meeting of the Colon Humane Society with election of officers was held in the municipal building, Colon, on Saturday evening, December 21. This meeting closed the year 1911-1912 and the officers chosen for 1913-1914 were as follows: Dr. Claude C. Pierce, President; Judge Erasmo Mendez, Mr. Arcelio Prieto, secretary; Mr. Frank Ullrich, treasurer; Mr. Clifford Byone, auditor.

The Canal Zone schools closed for the Christmas holidays on Friday, December 20, and will reopen for the winter term on Thurs-

day, January 22. The enrollment for the term just completed was the largest in the history of the schools. In the section for white pupils it was about 1250, and in that for colored pupils it was about 1150, making a total of about 2,400 for both sections. In the consolidated high schools, at Gatun, Empire, and Ancon, there were 84 students, a gain of 34 over any previous year.

PERSONAL.

President Taft and his party sailed for Key West on December 26 on the *U. S. S. Delaware*, under convoy of the *Arkansas*. They were accompanied by Col. Geo. W. Goethals and Mrs. Goethals.

Col. W. C. Gorgas, Maj. Robert E. Noble, and Mr. J. A. LePrince and party sailed from Guayaquil December 14. They arrived at the quarantine station in Panama Bay on December 28 and were released on the 31st, seven days after departure from Guayaquil.

Mr. Frank Feuille sailed for the United States on December 28, on the *Cristobal*.

Mr. Edward Schildhauer returned on December 26 from the United States, from special leave for the purpose of inspecting machinery in the course of manufacture for use in the locks.

A Congressional party composed as follows, arrived from the United States on December 26, on the *Panama*, for the week of sight-seeing along the Canal: Owen Calloway and Mrs. Calloway, Mrs. Champ Clark and daughter, Maurice Connelly, J. C. Copley and Mrs. Copley, G. E. Foss, W. S. Hammond, A. E. Kendall, W. S. Kenyon and Mrs. Kenyon, Thomas F. Konop and Mrs. Konop, George A. Loud and two daughters, W. A. Oldfield and Mrs. Oldfield, I. S. Pepper, Miles Poindexter and Mrs. Poindexter, J. D. Post, Chas. H. Sloan, E. P. Sweet, Mrs. Sweet and daughter, S. Warburton, Mrs. Warburton, daughter and son, W. W. Wedemeyer, I. D. Young, Mrs. Young, and daughter. Mr. and Mrs. Kenyon and Mr. Kendall sailed for the United States on December 28, on the *Cristobal*; others of the party will leave on January 2, on the *Panama*.

Obituary

A. Leitinen, an employee of the Mechanical Division at Gorgona, died at Ancon hospital on December 17. He was 45 years of age, married, and had been on the Isthmus six years; he was born in Finland. He is survived by his wife, Mrs. Katherin Leitinen, living at Gorgona.

New Year's dances were held at the Tivoli Club, Ancon, and at Kangaroo Hall, Empire, on New Year's Eve.

Band Concert.

A concert will be given by the Isthmian Canal Commission band at Gatun, C. Z., on Sunday, January 5, at 5 p. m. The program follows:

1. March—*Distant Greetings* Doring
2. Selection—*Bohemian Girl* Balfe
3. An Old-time Shuffle—*The Darkies Dream* Lansing
4. Overture—*Stadell* Flotow
5. Popular song—*On Moonlight Bay* Wentz
6. Waltz—*Blue Danube* Strauss
7. Intermezzo and Barcarolle from *Les Contes de Hoffman* (by request) Offenbach
8. Descriptive—*Evening Idyls* Barhausen
9. March—*Wein Bleib Wein* Schrammel

CHARLES E. JENNINGS, Musical Director.

A concert will be given at Corozal on Sunday, January 12, at 4.30 p. m.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

Moving picture schedule for the week January 6 to 11, is as follows: Monday, Culebra; Tuesday, Corozal; Wednesday, Empire; Thursday, Gorgona; Friday, Cristobal; Saturday, Gatun.

COROZAL.

The wrestling class started Monday, December 23, with six men present.

Tuesday evening, December 24, the Sunday school conducted an interesting Christmas eve program, at the end of which presents and candy were distributed among the children.

Free bowling, pool and billiards, red lemonade and mixed nuts were enjoyed by all those who stayed around the clubhouse during Christmas day. At night, 290 people were entertained by Miss Gay Zenola MacLaren in "The Governor's Lady."

Duckpin scores of 100 or over for the week ending December 28, were: Beall, 100; Kent, 100; Souder, 105, 115; Kite, 101; Connors, 108; Deans, 101; Ryan, 102; Humphreys, 101.

Scores in tenpins of over 200 were all made by Mr. Ottli, whose highest score was 232.

The left-handed duckpin bowlers lost to the right-handed bowlers. Friday night, December 27, in three closely contested games.

On Sunday evening, December 29 Miss MacLaren presented "The Music Master" to an audience that filled the hall.

CULEBRA.

On Tuesday evening, Christmas eve, the Sunday school gave a Christmas concert in the school house. Gifts and candy were distributed by Santa Claus. After this program the Y. M. C. A. took charge and an entertainment for the older folks was given as follows: Piano duet, Mr. and Mrs. Bronson; violin solo, Mr. Whitehead, accompanied by Mrs. Dickson; baritone solo, "Silver Threads Among the Gold," Mr. Lynch; mandolin solo by Mr. Ramsey, accompanied by Mr. Howard; solo by Mr. Critchlow, accompanied by Mr. Bronson on the piano and Mr. Whitehead, violin. Refreshments of cake, apples and punch were served.

Miss MacLaren will appear on Tuesday, January 7, in "Within the Law." There will be no reserved seats.

Two sets of pool balls and a set of billiard balls have been received from the States.

A cigar and candy stand will be in operation on January 2, at which employees of the Commission may purchase supplies for cash.

EMPIRE.

For the last five years the Empire Y. M. C. A. tenpin bowling teams have won the Isthmian championship. The team of 1908 was made up of the following men: Bardleson, Brown, Edwards, Durand, and Dougherty. The 1909 team: Brown, Potter, Hinckley, Huson, Bardleson. The 1910 team: Pearson, Gustavson, Potter, Huson, and Bardleson. The 1911 team consists of ten men, as follows: Potter, Gustavson, Pearson, Huson, Pinney, Rodeighiro, Giavolli, Parkis, Davis. The 1912 team, which has just won the Isthmian tournament, consisted of Huson, Potter, Gustavson, Edwards, Pearson, and Pinney. This team won twenty out of thirty games.

High scores were made in the duckpin tournament games during the past week, as follows: Pinney, 110, 113, 111, 110, 120, 119, 107, 109; Edwards, 110; Brown, 118; Andrews, 107; Diedrich, 120; Scull, 107; Goolsby, 115; Rodeighiro, 123, 113, 109, 107.

On Thursday, December 26, Miss MacLaren gave the play entitled "Within the Law." She will be at Empire for the last time on January 6.

Sixteen have entered the duckpin tournament for boys.

Mr. H. W. Sawtelle won the monthly handicap pool tournament for the month of December.

The "smoker" advertised for New Year's eve has been postponed, but will be held in January.

GORGONA.

On Sunday, December 22, the Gorgona Chorus gave an entertainment in the Empire clubhouse.

Over 800 people attended the Christmas entertainment that was given on December 25. The program was rendered by the girls and boys of Gorgona. The first was given to the children and parents, after which the children were sent to the game room and received refreshments and Christmas stockings. At 8.25 o'clock the second program was rendered for the older folks. It consisted of the following: Gorgona Orchestra; two selections by the Gorgona Chorus, and four selections by the Children's Chorus. This was followed by recitations, "Christmas Stocking," "Seven Cousins," and "Drill Topsy Turvy." After the entertainment refreshments were served.

On Thursday afternoon Miss MacLaren gave an entertainment for the ladies of Gorgona, 225 of whom

attended. After the program refreshments were served. On Saturday evening Miss MacLaren gave the selection "Within the Law." The next entertainment to be given by Miss MacLaren will be on Sunday evening, January 5, when she will render "The County Chairman."

Following are the high scores for the week ending December 28:

Big Pins—Gibhart, 213; Roper, 222, 201, 203.
Duckpins—King 104; Sims 104; Davis 103, 101;
Ruckte 100; Rhodes 100; Simka 102.

The Gorgona Chorus will again meet for regular rehearsal on January 8, and will make ready for a special concert in the near future.

GATUN.

The boys' athletic contest was brought to a close on Monday, December 23. James Jervey, with 2,114 points, receives a gold medal as first prize; Franklin Cummings, with 1,849 points, receives a silver medal as second prize; and George Meis, with 1,807 points, receives a bronze medal as third prize.

Twenty-five new library books were placed on the shelves during the past week.

"Open house" was observed on Christmas Day. An all day bowling tournament was held. The married men defeated the single men in a game of volley ball. In the evening, in addition to the moving picture, slides illustrating the early life of Christ were shown and recitations, drills and songs were given by the children. After the entertainment informal singing was enjoyed by the men and Roswell Homer played several piano selections.

Several new educational classes will be started, beginning the first week in January. The Spanish classes did not meet during the holidays but will resume this week.

The two new rowing machines have arrived and are proving a popular feature in the gymnasium.

"Open house" is to be observed at the clubhouse on New Year's day.

Miss Gay Zenola MacLaren will give her third and last recital on Friday evening, January 3.

Gatun "Reds" won two out of three games of duckpins played with the Gatun "Stars" on Saturday evening, December 28. The scores were as follows:

Gatun Reds.				Gatun Stars.			
Harper....	88	98	89	Green....	78	85	79
Jackson....	74	61	84	DePorter..	69	92	90
Carlson....	83	92	83	Claherty..	84	112	80
Humphreys..	79	84	90	DeMoll....	80	80	96
Barte.....	82	92	92	Wurster..	95	75	83

Totals.... 406 427 438 406 444 428

The "Reds" won the roll-off.

High scores for the week are: *Tenpins*—Humphrey, 246. *Duckpins*—Claherty, 112.

CRISTOBAL.

There was an attendance of 175 children at a special moving picture show given Monday afternoon, December 23.

The first part of the Christmas eve entertainment consisted of exercises by the children of the Sunday school and Miss Gay Zenola MacLaren gave "Rebecca of Sunnybrook Farm." Candy and apples were distributed to all. The second part contained two duets by Messrs. E. L. and R. S. Mosher, a solo by the former, and "Shore Acres" by Miss MacLaren. The third part was for the ladies, to whom refreshments were served in the game room. Each guest received a box of candy and an apple.

The total attendance at the three entertainments was about 700.

The married men's gymnasium class will begin on January 7 at 8 p. m. This class will meet each Tuesday and Friday night.

"The Governor's Lady" will be given by Miss MacLaren at Cristobal on January 4. Tickets will be on sale January 1. All seats will be reserved; members free, others 50 cents.

All checker players are requested to meet Wednesday, January 8, to organize for a tournament.

PORTO BELLO.

Miss Gay Zenola MacLaren presented "The Man from Home" before an appreciative audience on Saturday night, December 21.

The "Blues" won the Sunday school attendance contest by a score of 128 to 103 points. As losers, the "Reds" entertained the "Blues" with a picnic on New Year's day.

The Christmas celebration observed on Christmas eve was the most successful ever given at Porto Bello. After an entertainment rendered by the children of the Sunday school, Santa Claus gave every resident of Porto Bello a present. The ladies served a luncheon, which was followed by an informal dance. Committees: Chairman, J. L. Tolar; Finance, Urwiler, Wright, and Page; Refreshments, Mrs. Cornelison and Mrs. Keene; Program, Mrs. VanVoy and Mr. Page; Purchasing, Miss Moon and Mrs. Towne; Decorating, Mrs. Geyer and Messrs. Sauvan, Thompson and Reichart. Mr. James H. Reichart painted the scenery for the occasion.

OFFICIAL CIRCULARS.

Consolidation of Timekeeping Forces.

CULEBRA, C. Z., December 24, 1912.

CIRCULAR No. 183-T:

With the approval of the Secretary of War, the timekeeping for the Quartermaster's Department and all divisions of the Chairman and Chief Engineer's Office will be placed under the supervision of the Examiner of Accounts, effective December 26, 1912. This includes those branches of the work recently transferred to the Chief Engineer's Office when the Pacific Division was abolished, and the timekeeping force and records at Corozal will be transferred to the Administration Building at Culebra, at which point the timekeeping work will be centered, on the above date. The formal transfer of the timekeeping forces on the rolls will be made effective January 1, 1912.

The timekeeping work of the Departments of Civil Administration and Sanitation will be transferred to the Culebra office on January 10, 1913, or as soon thereafter as may be agreed upon between the heads of those departments and the Examiner of Accounts.

GEO. W. GOETHALS, *Chairman.*

Acting Chairman and Chief Engineer.

CULEBRA, C. Z., December 26, 1912.

CIRCULAR No. 469:

Upon return from the leave on which he is now absent Col. H. F. Hodges will, during my absence from the Isthmus, be in charge of the work as Acting Chairman and Chief Engineer.

In the interim between my departure and the return of Colonel Hodges, Mr. H. H. Rousseau will act as Chairman and Chief Engineer, effective December 27, 1912.

GEO. W. GOETHALS, *Chairman and Chief Engineer.*

Commissary Books for Cash.

CULEBRA, C. Z., December 26, 1912.

CIRCULAR No. 256-T:

Effective December 28, 1912, commissary coupon books will be sold for cash at the Pedro Miguel Commissary on Wednesdays and Saturdays from 3 to 5.30 p. m.

The sale of commissary coupon books at Paraiso is authorized on Wednesdays and Saturdays from 8 a. m. to 12 m.

GEO. W. GOETHALS, *Chairman.*

Acting Head of the Department of Law.

CULEBRA, C. Z., December 28, 1912.

CIRCULAR No. 470:

Effective this date, Mr. William K. Jackson will act as Head of the Department of Law during the absence from the Isthmus of Judge Frank Feuille.

H. H. ROUSSEAU, *Acting Chairman.*

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending January 8, 1912, (75th meridian time):

DATE.	High		Low		High	
	A.M.	A.M.	P.M.	P.M.	P.M.	P.M.
January 2		5.15	11.30	5.38	11.51	
January 3			6.18	12.43		
January 4	12.56	7.20	1.48	7.46		
January 5	1.56	8.17	2.45	8.42		
January 6	2.30	9.07	3.32	9.30		
January 7	3.36	9.52	4.12	10.15		
January 8	4.18	10.33	4.50	10.55		

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, December 28, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela	Gamboa.	Gatun Lake.
Sun., December 22....	127.2	93.4	49.3	49.1
Mon., December 23....	127.0	93.3	49.0	48.7
Tue., December 24....	127.8	93.8	48.7	48.4
Wed., December 25....	127.5	93.8	48.7	48.3
Thurs., December 26....	127.4	93.6	48.6	48.3
Fri., December 27....	132.0	96.7	50.0	48.4
Sat., December 28....	128.2	94.8	49.7	48.3
Height of low water to the nearest foot....	125.0	91.0	44.0	

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning January 1, 1913:

FRESH MEATS.		Price.
Mutton—Stewing per pound.....		6
Shoulder, neck trimmed off (4 pounds and over), per pound.....		9
Entire forequarter (not trimmed, 10 pound and over), per pound.....		8
Leg (8 to 10 pounds), per pound.....		17
Cutlets, per pound.....		18
Short cut chops, per pound.....		20
Lamb—Stewing, per pound.....		6
Entire forequarter, neck trimmed off, per pound.....		9
Leg (5 to 8 pounds), per pound.....		20
Chops, per pound.....		24
Cutlets, per pound.....		24
Veal—Stewing, per pound.....		10
Shoulder, for roasting (not under 4 pounds), per pound.....		12½
Chops, shoulder, per pound.....		16
Chops, per pound.....		24
Loin for roasting, per pound.....		24
Cutlets, per pound.....		28
Pork—Loin chops or roast, per pound.....		16
Beef—Suet, per pound.....		2
Soup, per pound.....		5
Stew, per pound.....		8
Plate, per pound.....		9
Corned, No. 1, per pound.....		14
Corned, No. 2, per pound.....		12
Chuck roast (3 pounds and over), per pound.....		12
Pot roast, per pound.....		15
Rib roast, second cut (not under 3½ pounds), per pound.....		16
Rib roast, first cut (not under 3 pounds), per pound.....		18
Sirloin roast, per pound.....		19
Rump roast, per pound.....		19
Porterhouse roast, per pound.....		20
Steak, chuck, per pound.....		12½
Round, per pound.....		13
Rib, per pound.....		18
Sirloin, per pound.....		19
Rump, per pound.....		19
Porterhouse (not less than 1½ pounds), per pound.....		20
Tenderloin (Western), per pound.....		30
Vension (Imported), Stew, per pound.....		6
Forequarter (not under 6½ pounds), per pound.....		9
Rack (not under 5½ pounds), per pound.....		20
Saddle (not under 7½ lbs.), per pound.....		20
Leg (not under 9 pounds), per pound.....		20
Chops, per pound.....		24
Cutlets, per pound.....		24
MISCELLANEOUS.		
Livers—Beef, per pound.....		11
Calif, each.....		60
Half, each.....		30
Steak Hamburger, pkg.....		13
Sausage—Bologna, per pound.....		11
Frankfurter, per pound.....		12
Lieberwurst, per pound.....		13
Devonshire Farm, per pound.....		19
Sweetbreads—Beef, per pound.....		30
Eggs, fresh, dozen.....		*38
one-half dozen only.....		20
Bluefish, per pound.....		15
Halibut, fresh, per pound.....		15
Salmon, fresh, per pound.....		22
Oysters, quarts, per keg.....		*40
Shad, fresh, each.....		50
Roes, shad, pair.....		25
POULTRY AND GAME.		
Chickens—Fancy roasting, milk fed, large, each.....		1.40
Fancy roasting, milk fed, med., each.....		1.10
Fancy roasting, corn fed, about 5½ pounds each.....		1.25
Fancy roasting, corn fed, about 4½ pounds, each.....		1.00
Fowls, each.....		††60, 70, 80, 90, 1.00
Ducks, (Western, about 4½ pounds), each.....		1.25
Geese, each.....		1.90
Broilers, milk fed, each.....		70
Broilers, corn fed, each.....		60
Turkeys, per pound.....		26
Squabs, each.....		35
Capons, each.....		2.10
Ducks, blackhead, pair.....		60
teal, pair.....		50
Partridges, pair.....		1.30
Grouse, per pair.....		1.30
Pheasants, per pair.....		1.30
CURED AND PICKLED MEATS.		
Ham—German, Westphalia, per pound.....		36
Sugar cured, per pound.....		20
Sliced, per pound.....		22
Half, for boiling, per pound.....		21
Boiled, per pound.....		23
Hocks, per pound.....		18
Beef, salt family, per pound.....		12

	Price.
Bacon—Breakfast, whole piece, per pound	25
sliced, per pound	26
Ham, Lunch, per pound	32
Pork, salt, family, per pound	14
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18

DAIRY PRODUCTS.

Butter—Creamery, special, per pound	40
Sheffield Farms, extra fancy, per lb.	46
Cheese—Philadelphia cream, cake	35
Roquefort, per pound	22
Young America, per pound	28
Swiss, per pound	22
Edam, each	1.00
Parmesan, per pound	35
Edam, tin	34
Gouda, per pound	10
Snappy, cake	**20
Milk (Certified), per bottle	**20
Fer-mil-lac, bottle	**20
Ice cream, quart	25
1 gallon	50

VEGETABLES AND FRUITS.

Beets, per pound	3
Celery, per head	6
Cabbage, per pound	3
Cucumbers, per pound	8
Carrots, per pound	3
Cauliflower, per pound	12
Lettuce, per pound	12
Onions, per pound	3
Parsley, per bunch	1
Potatoes, white, per pound	3
sweet, per pound	3 1/2
Parsnips, per pound	15
Peppers, green, per pound	10
Romaine, per pound	3
Squash, per pound	3
Turnips, per pound	3
Yams, per pound	4
Apples, per pound	10
Cranberries, per pound	12
Grapes, Spanish, per pound	4
Grape fruit, each	24
Lemons, dozen	80
Limes, per 100	8
Pears, per pound	12
Oranges, Jamaica, per dozen	12

*Indicates reductions from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advances on last list.

††Fowls weigh each about as follows: 3, 3 1/2, 4, 4 1/2, and 5 pounds. Prices are based accordingly; when size ordered is not in stock supply next lightest weight is supplied and refund note sent for difference.

‡Sold only from Commissaries; no orders taken for delivery.

Supplies for the Canal.

* The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending December 28:

Advance, December 21, from New York, with 30 coils steel wire, 42 packages wheels and tires, 75 cases incandescent lamps, 16 crates sash and blinds, for Mechanical Division; 31 packages castings, for Pacific Division; 67 barrels spikes, 96 packages sash and doors, for Panama Railroad Company; 267 cases candles, 320 bundles roofing iron, 30 carboys muriatic acid, for stock; and a miscellaneous cargo, the whole consisting of 1,115 packages and weighing 165 tons.

Sixola, December 22, from New York, with 10 cases electrical material, 15 cases pump machinery, for Superintendent of Erection; 38 barrels rosin, 16 carboys electrolyte, for stock.

Prinz Joachim, December 23, from New York, with 16 kegs bolts, 15 barrels pipe fittings, for stock.

Artist, December 24, from Liverpool, with 24 dredge buckets, 24 bucket links, 22 pieces chains, for 6th division Chief Engineer's Office.

Almirante, December 25, from New York, with 121 cases electrical material, 10 reels cable, 5 cases castings, for Superintendent of Erection; 125 pieces cast iron pipe, for Atlantic Division; 33 crates pipe and fittings, 8 reels cable, 25 pieces steel beams, 20 cases hardware, 15 cases water closets, for stock.

Abangarez, December 26, from New Orleans, with 361 tons pig iron, for Mechanical Division; 242 bales rice straw, 298 pieces piling, 4,664 pieces yellow pine lumber, 246 pieces cross ties, 700 cases kerosene, 49 rolls cotton duck, for stock.

Panama, December 26, from New York with 10 cases castings, 55 bales excelsior, 10 barrels pipe fittings, 10 bales suction hose, 15 cases varnish, 150 barrels alum, 12 cases hardware, 45 cases paints, 60 barrels batteries, 12 cases electrical material, for stock; 2,271 bundles steel bars, 17 pieces steel bars, for (Balboa) 6th Division of Chief Engineer's Office; 143 cases electrical material, for Superintendent of Erection; 52 cases ranges and parts, 100 barrels plaster, 23 packages, signal material, 80 crates fibre furniture, 8 crates enamel beds, for Panama Railroad Company; 300

pieces castings, 10 cases lamp shades, for Mechanical Division; and a miscellaneous cargo, the whole consisting of 3,565 packages, weighing 650 tons.

Aslec, December 27, from San Francisco, with 20 bales or dredging sleeves, for Pacific Division.

The following ships arrived at, or departed from the port of Balboa during the two weeks ending December 28:

Arrivals—December 16, *Pachitea*, from Callao; December 16, *Peru* (P. S. N.), from Guayaquil; December 17, *Quito*, from Guayaquil; December 18, *Limari*, from Valparaiso; December 19, *Santa Rita*, from Port Harford.

Departures—December 15, *Ucayali* to Callao; December 16, *Guatemala*, to Callao; December 19, *Barracouta* to San Francisco; December 20, *Kansas City* to San Francisco.

Arrivals—December 23, *Mexico*, from Valparaiso; December 26, *Manavi*, from Guayaquil; December 26, *Mackinaw*, from San Francisco; December 26, *Aslec*,

from San Francisco; December 26, *Pennsylvania*, from San Francisco; December 27, *Tricolor*, from San Francisco; December 27, *Ecuador*, from Guayaquil.

Departures—December 22, *San Juan*, to San Francisco; December 22, *Peru* (P. S. N.), to Guayaquil; December 22, *Santa Rita*, to Port Harford; December 23, *Limari*, to Valparaiso; December 23, *Pachitea*, to Valparaiso.

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday, and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

LOST—At the end of Pedro Miguel Bridge, or on rear coach of Train No. 22, December 25, hotel book No. 265784. Finder will please return to Board of Health Laboratory, Ancon, and receive reward.

PANAMA RAILROAD COMPANY.

PASSENGER TRAIN TIME TABLE No. 13—IN EFFECT JANUARY 6, 1913.

		SOUTHWARD.											
STATION	Distance from Colon	Sund'y only.	Sat. only.	Sunday only					Daily Except Sunday.				
		73	71	29	27	25	23	21	7	5	3		
		A. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	A. M.	A. M.		
Leave.													
Colon	0	12.15	6.10	7.10	4.10	1.10	10.10	6.50	4.25	10.30	5.30		
Mount Hope	1.57	12.20	6.15	7.15	4.15	1.15	10.15	6.55	4.30	10.35	5.35		
Mindi	4.36	12.25	6.20	7.20	4.20	1.20	10.20	7.00	4.35	10.40	5.41		
New Gatun	5.94	12.30	6.25	7.25	4.25	1.25	10.25	7.05	4.40	10.45	5.46		
Gatun	6.79	12.35	6.30	7.30	4.30	1.30	10.30	7.10	4.45	10.51	5.51		
Monte Lirio	14.50	12.48	6.43	7.43	4.43	1.43	10.43	7.23	4.58	11.04	5.64		
Bohio	17.54	12.53	6.50	7.48	4.48	1.48	10.48	7.28	5.03	11.09	5.69		
Frijoles	20.94	12.59	6.55	7.54	4.54	1.54	10.54	7.34	5.09	11.15	5.75		
		A. M.											
Gorgona	33.11	1.30	7.25	8.25	5.25	2.25	11.25	8.05	5.40	11.46	5.86		
Matachin	31.70	1.34	7.29	8.29	5.29	2.29	11.29	8.09	5.45	11.50	5.90		
			P. M.										
Bas Obispo	32.63	1.38	7.33	8.33	5.33	2.33	11.33	8.13	5.50	11.55	5.95		
Las Cascadas	34.24	1.42	7.37	8.37	5.37	2.37	11.37	8.17	5.55	12.00	5.70		
Empire	36.53	1.48	7.43	8.43	5.43	2.43	11.43	8.23	5.62	12.06	5.76		
Culebra	37.52	1.53	7.48	8.48	5.48	2.48	11.48	8.28	5.66	12.11	5.71		
Paraiso Jct.	41.36	2.04	7.59	8.59	5.59	2.59	11.59	8.39	5.77	12.22	5.82		
			P. M.										
Pedro Miguel	41.75	2.06	8.01	9.01	6.01	3.01	12.01	8.41	5.79	12.24	5.84		
Miraflores	43.26	2.11	8.06	9.06	6.06	3.06	12.06	8.46	5.84	12.29	5.89		
Corozal	45.75	2.16	8.11	9.11	6.11	3.11	12.11	8.51	5.89	12.34	5.94		
Diablo	46.43	2.18	8.13	9.13	6.13	3.13	12.13	8.53	5.91	12.36	5.96		
Panama	48.59	2.25	8.20	9.20	6.20	3.20	12.20	9.00	6.00	12.45	6.05		
Arrive		A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	P. M.	P. M.	A. M.		
s. Stop.	f. Flag	73	71	29	27	25	23	21	7	5	3		

		NORTHWARD.											
STATION.	Distance from Colon.	Daily except Sunday				Sunday only.						Satur-day only.	Sund-day only.
		2	4	6	8	20	22	24	26	28	30*	72	74
		A. M.	P. M.	P. M.	P. M.	A. M.	P. M.	P. M.	P. M.	P. M.	A. M.	P. M.	A. M.
Arrive.													
Colon	0.00	8.55	12.25	3.45	7.40	8.50	12.10	3.10	6.10	9.10	1.10	8.10	2.50
Mount Hope	1.57	8.50	12.20	3.40	7.35	8.45	12.05	3.05	6.05	9.05	1.05	8.05	2.45
Mindi	4.36	8.44	12.14	3.37	7.29	8.39	11.59	2.59	5.59	8.59	12.59	7.59	2.39
							P. M.						
New Gatun	5.94	8.41	12.11	3.31	7.26	8.36	11.56	2.56	5.56	8.56	12.56	7.56	2.36
Gatun	6.79	8.37	12.07	3.27	7.21	8.33	11.53	2.53	5.53	8.53	12.53	7.53	2.33
Monte Lirio	14.50	8.22	11.52	3.12	7.06	8.18	11.38	2.38	5.38	8.38	12.38	7.38	2.18
Bohio	17.54	8.16	11.46	3.06	7.00	8.12	11.32	2.32	5.32	8.32	12.32	7.32	2.12
Frijoles	20.94	8.10	11.40	3.00	6.55	8.06	11.26	2.26	5.26	8.26	12.26	7.26	2.06
											A. M.		
Gorgona	33.11	7.39	11.09	2.29	6.24	7.36	10.56	1.56	4.56	7.56	11.56	6.56	1.36
Matachin	31.70	7.34	11.04	2.24	6.19	7.31	10.51	1.51	4.51	7.51	11.51	6.51	1.31
Bas Obispo	32.63	7.30	11.00	2.20	6.15	7.27	10.47	1.47	4.47	7.47	11.47	6.47	1.27
Las Cascadas	34.24	7.25	10.55	2.15	6.10	7.23	10.43	1.43	4.43	7.43	11.43	6.43	1.23
Empire	36.53	7.19	10.49	2.09	6.04	7.17	10.37	1.37	4.37	7.37	11.37	6.37	1.17
Culebra	37.52	7.14	10.44	2.04	5.59	7.12	10.32	1.32	4.32	7.32	11.32	6.32	1.12
Paraiso Jct.	41.36	7.00	10.30	1.50	5.45	6.59	10.19	1.19	4.19	7.19	11.19	6.20	11.59
Pedro Miguel	41.75	6.59	10.29	1.49	5.44	6.57	10.17	1.17	4.17	7.17	11.17	6.19	12.57
Miraflores	43.26	6.54	10.24	1.44	5.39	6.53	10.13	1.13	4.13	7.13	11.13	6.13	12.53
Corozal	45.75	6.48	10.18	1.38	5.33	6.47	10.07	1.07	4.07	7.07	11.07	6.07	12.47
Diablo	46.43	6.45	10.15	1.35	5.30	6.44	10.04	1.04	4.04	7.04	11.04	6.04	12.44
Panama	48.59	6.40	10.10	1.30	5.25	6.40	10.00	1.00	4.00	7.00	11.00	6.00	12.40
Leave.		A. M.	A. M.	P. M.	P. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.
f. Flag.	s. Stop.	2	4	6	8	20	22	24	26	28	30	72	74

*Leaves Panama Sunday night, arrives Colon Monday morning.

CANAL DIRECTORY.

ISTHMIAN CANAL COMMISSION.

Col. Geo. W. Goethals, U. S. A., Chairman and Chief Engineer, Culebra.
 Col. H. F. Hodges, U. S. A., Culebra.
 Lieut.-Col. D. D. Gaillard, U. S. A., Empire.
 Lieut.-Col. Wm. L. Sibert, U. S. A., Gatun.
 Civil Engineer H. H. Rousseau, U. S. N., Culebra.
 Col. W. C. Gorgas, U. S. A., Ancon.
 Mr. Maurice H. Thatcher, Ancon.
 Mr. Joseph Bucklin Bishop, Secretary, Ancon

DEPARTMENTS.

Construction and Engineering.

Office of The Chairman.

Col. Geo. W. Goethals, Chairman and Chief Engineer.

William Howard May, Secretary to the Chairman.

C. A. McIlvaine, Chief Clerk.

W. P. Copeland, Assistant Chief Clerk.

Ad. Faure, Chief Accountant.

H. S. Farish, Surveying Officer.

Lieut. Geo. R. Goethals, U. S. A., Assistant Engineer, Fortifications.

Office of The Chief Engineer.

First Division.

Col. H. F. Hodges, Assistant Chief Engineer.

C. O. Carlson, Secretary.

Edward Schildhauer, Electrical and Mechanical Engineer.

Henry Goldmark, L. D. Cornish, T. B. Mönne, Designing Engineers.

Walter F. Beyer, Assistant Engineer.

Second Division.

Civil Engineer H. H. Rousseau, Assistant to the Chief Engineer.

J. J. Campbell, Secretary.

Lt.-Col. T. C. Dickson, U. S. A., Inspector of Shops.

A. B. Nichols, Office Engineer.

Civil Engineer F. H. Cooke, U. S. N., Designing Engineer.

H. D. Hinman, Assistant Engineer.

G. I. Finley, Assistant Engineer.

F. D. Willson, Supervisor.

James G. Craig, Traveling Engineer.

Third Division

(Abolished.)

Fourth Division.

Office of the Chief Clerk.

Fifth Division.

Headquarters, Corozal.

H. O. Cole, Resident Engineer.

J. C. Keller, Chief Clerk.

Walter J. Spalding, Assistant Engineer.

W. L. Thompson, Assistant Engineer.

Sixth Division.

Headquarters, Balboa.

W. G. Comber, Resident Engineer.

James MacFarlane, Superintendent of Dredging.

Central Division.

Headquarters, Empire.

Lieut.-Col. D. D. Gaillard, Division Engineer.

W. I. Beam, Chief Clerk.

A. E. Bronk, General Inspector.

A. S. Zinn, Resident Engineer.

Mark W. Tenny, Assistant Engineer.

J. M. Hagan, Superintendent Construction.

Joseph Little, Superintendent Construction.

W. T. Reynolds, Superintendent Construction.

A. Sessions, Superintendent Transportation.

Dan E. Wright, Superintendent, Municipal Work and Pipe Lines.

Rance Ferguson, General Foreman, Relocation Dumps.

Atlantic Division.

Headquarters, Gatun.

Lieut.-Col. Wm. L. Sibert, Division Engineer.

Maj. Chester Harding, U. S. A., Assistant Division Engineer.

Ben Jenkins, Chief Clerk.

Maj. J. P. Jervey, U. S. A., Resident Engineer.

Capt. W. H. Rose, U. S. A., Electrical Superintendent.

Maj. G. M. Hoffman, U. S. A., Resident Engineer.

Geo. M. Wells, Office Engineer.

Mechanical Division.

Headquarters, Gorgona.

A. L. Robinson, Superintendent

William Taylor, Chief Clerk

Henry Schoellhorn, Mechanical Engineer.

W. H. Bates, Superintendent, Steamshovel Repairs.

Hartley Rowe, Electrical Superintendent.

Subsistence.

Headquarters, Cristobal.

Lieut.-Col. Eugene T. Wilson, U. S. A., Sub-sistence Officer.

Capt. Frank O. Whitlock, U. S. A., Assistant Sub-sistence Officer.

John Burke, Manager, Commissary Department.

W. F. Shipley, Chief Clerk.

Quartermaster's.

Headquarters, Culebra.

Col. C. A. Devol, U. S. A., Chief Quartermaster.

Capt. R. E. Wood, U. S. A., Assistant Chief Quartermaster.

Lieut. Walter D. Smith, U. S. A., Constructing Quartermaster.

C. H. Mann, Chief Clerk.

Capt. C. Nixon, U. S. A., Depot Quartermaster, Mount Hope.

C. L. Parker, Assistant Depot Quartermaster, Mount Hope.

V. C. Dillon, Acting Storekeeper, Gatun.

R. K. Morris, Storekeeper, Gorgona.

D. H. Beaman, Storekeeper, Empire.

C. A. Gilman, Storekeeper, Miraflores.

X. D. Holt, Storekeeper, Balboa.

District Quartermasters.

B. C. Poole, Ancon and Balboa.

J. H. K. Humphreys, Corozal and Miraflores.

J. T. Smith, Pedro Miguel and Paraiso.

H. F. Sedwick, Culebra.

W. G. Ross, Empire.

Harry Dundas, Las Cascadas and Bas Obispo.

R. C. Shady, Gorgona.

R. M. Gamble, Gatun.

Roy R. Watson, Cristobal, and Toro Point.

Chas. D. Morgan, Porto Bello.

Civil Administration.

Headquarters, Ancon.

Maurice H. Thatcher, Head of the Department.

G. A. Ninas, Chief Clerk.

C. L. Luedtke, Assistant Chief Clerk.

Tom M. Cooke, Chief, Division of Posts, Customs, and Revenues, Ancon.

Arthur McGown, Deputy Collector, Ancon.

Jno. L. Stolar, Deputy Collector, Cristobal.

Capt. Chas. W. Barber, U. S. A., Chief of Police, Ancon.

A. G. Balknap, Assistant Chief of Police, Ancon.

C. E. Weidman, Fire Chief, Cristobal.

Chas. F. Koerner, Assistant Fire Chief, Ancon.

M. E. Gilmore, Supt. Public Works, Ancon.

J. J. Reidy, Assistant Superintendent, Public Works, Colon.

F. A. Gause, Superintendent of Schools, Ancon.

Eugene H. Ash, Acting Treasurer of Canal Zone, Empire.

W. G. Comber, Chairman; James MacFarlane.

C. J. Anderson, Board of Local Inspectors.

Canal Zone Judiciary.

Headquarters, Ancon.

Supreme Court—H. A. Gudger, Chief Justice.

Walter Emery, Clerk, Ancon.

Thomas E. Brown, Jr., Associate Justice.

William H. Jackson, Associate Justice.

Circuit Court, First Circuit—H. A. Gudger, Judge.

Walter Emery, Clerk, Ancon.

Circuit Court, Second Circuit—William H. Jackson, Judge.

Elbert M. Goolsby, Clerk, Empire.

Circuit Court, Third Circuit—Thomas E. Brown, Jr., Judge.

Nelson R. Johnson, Clerk, Cristobal.

M. C. Rerdell, District Judge, Cristobal.

S. E. Blackburn, District Judge, Ancon.

Edgar S. Garrison, District Judge, Empire.

Law.

Headquarters, Ancon.

Frank Feuille, Counsel and Chief Attorney.

William K. Jackson, Prosecuting Attorney.

Charles R. Williams, Assistant Prosecuting Attorney.

A. A. Greenman, Land Agent.

Sanitation.

Headquarters, Ancon.

Col. W. C. Gorgas, Chief Sanitary Officer.

Col. John L. Phillips, U. S. A., Assistant Chief Sanitary Officer.

Maj. Robert E. Noble, General Inspector.

Harry E. Bovay, Chief Clerk.

Lieut.-Col. Charles F. Mason, U. S. A., Superintendent Ancon Hospital, Ancon.

Dr. Lloyd Noland, Acting Superintendent Colon Hospital, Cristobal.

Surgeon J. C. Perry, P. H. and M. H. S., Chief Quarantine Officer, and Health Officer, Panama.

Surgeon Claude C. Pierce, P. H. and M. H. S., Quarantine Officer, Colon.

Dr. Fleetwood Gruver, P. H. and M. H. S., Quarantine Officer, Panama.

Joseph A. LePrince, Chief Sanitary Inspector, Ancon.

Dr. M. E. Connor, Health Officer, Colon.

Disbursements.

Headquarters, Empire.

Edward J. Williams, Disbursing Officer.

Wm. M. Wood, Assistant Disbursing Officer.

C. E. Gilmore, Cashier.

L. A. Townsend, Acting Paymaster, Ancon.

J. C. Earle, Acting Paymaster, Cristobal.

Examination of Accounts.

Headquarters, Empire.

H. A. A. Smith, Examiner of Accounts.

T. L. Clear, Assistant Examiner of Accounts.

Purchasing Department.

Headquarters, Washington, D. C.

Maj. F. C. Boggs, U. S. A., General Purchasing Officer.

C. E. Dole, Chief Clerk.

Capt. Courtland Nixon, Purchasing Agent on the Isthmus.

Lt. Col. Wendell L. Simpson, U. S. A., Assistant Purchasing Officer, 24 State Street, New York City.

Capt. William O. Smith, U. S. A., Assistant Purchasing Agent, 614 Whitney-Central Building, New Orleans, La.

Panama Railroad Company.

Headquarters, Colon.

(General offices, 24 State Street, New York.)

J. A. Smith, General Superintendent, Colon.

R. L. Mock, Chief Clerk.

Lieut. Frederick Mears, U. S. A., Chief Engineer.

A. K. Stone, Master of Transportation.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Allianca.....	P. R. R.	Friday.....	Dec. 27
Colon.....	P. R. R.	Friday.....	Jan. 3
Advance.....	P. R. R.	Thursday.....	Jan. 9
Panama.....	P. R. R.	Wednesday.....	Jan. 15
Allianca.....	P. R. R.	Tuesday.....	Jan. 21
Colon.....	P. R. R.	Tuesday.....	Jan. 28
Advance.....	P. R. R.	Monday.....	Feb. 3
Panama.....	P. R. R.	Monday.....	Feb. 10
Allianca.....	P. R. R.	Saturday.....	Feb. 15
Colon.....	P. R. R.	Friday.....	Feb. 21
Advance.....	P. R. R.	Friday.....	Feb. 28
Panama.....	P. R. R.	Friday.....	Mar. 6
Allianca.....	P. R. R.	Wednesday.....	Mar. 12
Colon.....	P. R. R.	Tuesday.....	Mar. 18
Advance.....	P. R. R.	Tuesday.....	Mar. 25
Panama.....	P. R. R.	Monday.....	Mar. 31

CRISTOBAL TO NEW YORK.

Panama.....	P. R. R.	Thursday.....	Jan. 2
Allianca.....	P. R. R.	Wednesday.....	Jan. 8
Colon.....	P. R. R.	Wednesday.....	Jan. 15
Advance.....	P. R. R.	Tuesday.....	Jan. 21
Panama.....	P. R. R.	Tuesday.....	Jan. 28
Allianca.....	P. R. R.	Sunday.....	Feb. 2
Colon.....	P. R. R.	Sunday.....	Feb. 9
Advance.....	P. R. R.	Saturday.....	Feb. 15
Panama.....	P. R. R.	Saturday.....	Feb. 22
Allianca.....	P. R. R.	Friday.....	Feb. 28
Colon.....	P. R. R.	Saturday.....	Mar. 8
Advance.....	P. R. R.	Wednesday.....	Mar. 12
Panama.....	P. R. R.	Tuesday.....	Mar. 18
Allianca.....	P. R. R.	Monday.....	Mar. 24
Colon.....	P. R. R.	Sunday.....	Mar. 30
Advance.....	P. R. R.	Monday.....	Apr. 7
Panama.....	P. R. R.	Saturday.....	Apr. 12
Allianca.....	P. R. R.	Friday.....	Apr. 18
Colon.....	P. R. R.	Thursday.....	Apr. 24

NEW YORK TO COLON.

Colon.....	P. R. R.	Friday.....	Feb. 21
Advance.....	P. R. R.	Friday.....	Feb. 28
Panama.....	P. R. R.	Friday.....	Mar. 6
Allianca.....	P. R. R.	Wednesday.....	Mar. 12
Colon.....	P. R. R.	Tuesday.....	Mar. 18
Advance.....	P. R. R.	Tuesday.....	Mar. 25
Panama.....	P. R. R.	Monday.....	Mar. 31

COLON TO NEW YORK.

Panama.....	P. R. R.	Thursday.....	Jan. 2
Allianca.....	P. R. R.	Wednesday.....	Jan. 8
Colon.....	P. R. R.	Wednesday.....	Jan. 15
Advance.....	P. R. R.	Tuesday.....	Jan. 21
Panama.....	P. R. R.	Tuesday.....	Jan. 28
Allianca.....	P. R. R.	Sunday.....	Feb. 2
Colon.....	P. R. R.	Sunday.....	Feb. 9

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers for New York, via Kingston and Santiago de Cuba, sailing every Monday, leave alternately at 10 a. m. and 2 p. m.; the *Prins Joachim* and the *Prins August Wilhelm* at 2 p. m., and the *Prins Sigismund* and the *Prinz Eitel Friedrich* at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m.

CANAL



RECORD

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ANCON, CANAL ZONE, WEDNESDAY, JANUARY 8, 1913.

No. 20.

The Canal Record

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THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Cargo Handling at Balboa.

Cargo handling at Balboa docks was taken over by the Quartermaster's Department on January 1. The policy of the work and its internal economy will be directed by this department, but the workers will be carried on the rolls of the Panama Railroad Company.

Three berths at the pier, and two at the concrete wharf, comprise the docking facilities at the Pacific entrance at this time. All of the berths are filled most of the time, and frequently ships wait in the stream for a chance to dock. About 550 men are employed in the cargo handling in the day time and 250 at night.

Canal Work in December.

The grand total of Canal excavation to January 1 was 188,280,312 cubic yards, leaving to be excavated 24,223,826 cubic yards, or a little more than one-eighth of the entire amount necessary for the completed Canal. The total excavation for the month of December was 2,815,816 cubic yards.

The dry excavation amounted to 1,454,728 cubic yards, and was entirely by steamshovels. The dredges and monitors removed 1,361,088 cubic yards. The progress in the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 836,050 cubic yards. Of this total 16,677 cubic yards consisted of dry excavation at Gatun Locks, and the remainder was wet excavation—814,373 cubic yards from the Atlantic entrance, and 5,000 cubic yards dredged at Gatun Locks.

The total excavation in the Central Division was 1,074,510 cubic yards, which includes 29,892 cubic yards in the Culebra Cut section charged to Obispo Diversion.

In the Pacific Division, the total excavation was 905,256 cubic yards, 363,541 cubic yards of which consisted of dry excavation. Of the 541,715 cubic yards of wet excavation 349,747 cubic yards were from the channel,

and 191,968 cubic yards were taken out at the Balboa terminals.

A detailed statement of the excavation, and a summary of the work on the locks and dams follows:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—	Cu. Yds.	Cu. Yds.	Cu. Yds.
Locks, dam and spillway	16,677	.....	16,677
Mindi .....	.....	.....	.....
Terminal.....	.....	.....	.....
Total	16,677	.....	16,677
Wet excavation—			
Atlantic entrance.....	814,373	.....	814,373
Locks, dam and spillway	5,000	.....	5,000
Terminal.....	.....	.....	.....
Total	819,373	.....	819,373
Total wet and dry excavation.....	836,050	.....	836,050

CENTRAL DIVISION.

Dry excavation—		
Culebra Cut.....	1,044,618	1,044,618
Chagres section.....	.....	.....
Obispo Diversion	29,892	29,892
Total	1,074,510	1,074,510

PACIFIC DIVISION.

Dry excavation—		
Locks, dams and spillways	33,495	33,495
Terminal.....	27,598	27,598
Prism	302,448	302,448
Total	363,541	363,541
Wet excavation—		
Pacific entrance.....	349,747	349,747
Miraflores Locks.....	.....	.....
Diversions .....	.....	.....
Terminal.....	191,968	191,968
Total	541,715	541,715
Total wet and dry excavation	905,256	905,256

TOTAL CANAL EXCAVATION.

Dry excavation	1,454,728	1,454,728
Wet excavation.....	1,361,088	1,361,088
Total	2,815,816	2,815,816

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	Cu. Yds.	Cu. Yds.
Concrete placed in locks.....	5,697	53,704	59,401
Concrete placed in dams and spillways.....	3,066	440	3,506
Fill placed in dams.....	142,245	54,181	196,426

Mean rainfall along Canal (ten stations) 6.51 inches.

By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as a prism, diversions, or locks, etc., that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

Dry Season Work in Culebra Cut.

Excavation in Culebra Cut will be carried on during the dry season with the object of having all the work done by the beginning of

the next rainy season, except that in the two and one-half miles between Empire and Cucuracha.

A special effort will be made to dig out the slide on the west bank of the Canal at Culebra. Two shovels are at work on it, and the train service will be so arranged that these shovels will lie idle the least possible time, even though shovels elsewhere may be discriminated against in consequence. One shovel is now digging from the top of the bank, and it is probable that others will be added.

A new slide was developed on the east bank of the Canal opposite Culebra within the past month. The bank has broken for a thousand feet along the face, and if all of the material within the break slides into the Canal, it will probably aggregate a million cubic yards. Two steamshovels are excavating from the bottom of the slide.

Two steamshovels have been set at work completing the excavation in the anchorage basin at the north end of Pedro Miguel lock, and in the Cut nearby. The work includes bank excavation, taking a small amount of material from the bottom and cleaning up the small slides that have developed. It is expected that all the work between the locks and Cucuracha slide will be finished by March 1.

The break in the east bank of the Cut at Empire near the office of the Division Engineer showed further development on January 3, when about 125,000 cubic yards of material fell into the Canal. One shovel is at work on this slide.

Recent Slide Developments.

Early in December a slide on the east bank of the Canal opposite Culebra "Y," which had given evidences of its probable appearance some months previously, began to settle and move towards the Cut. This slide involves a little over 1,000,000 cubic yards of material, but it is not believed that all of this amount will have to be excavated and removed from the Cut. Two shovels are now engaged in working on the face of the slide with the view, if possible, of checking its further development and of cutting a bench into the bank in which broken material from the slide will fall and thereby be prevented from entering the prism of the Canal proper.

A portion of the Cucuracha slide, which has given very little trouble in the past two or three years, commenced a fairly active movement four or five weeks ago and within the past week a considerable additional amount of material has been brought down into the Canal. The total amount of material now in sight which will probably have to be removed is about 125,000 cubic yards. Two shovels are now working on this slide and will soon have all material which has entered the cut cleaned up.

The slide in the sharp ridge, immediately adjoining the north end of the Division Engineer's office, which had given no trouble

NOTES OF PROGRESS.

(Continued.)

for a year or more, but which threatened the safety of the Division Engineer's office about six weeks ago, began to move very rapidly towards the Cut on January 2, the rate of vertical subsidence on the afternoon of January 2 being four feet in 17 minutes. The moving material passed into the Cut, completely covering the two tracks on the west side of the drainage ditch, the total amount of material now in motion being about 125,000

cubic yards, but as the broken edge on the land side is practically vertical for a depth of at least 50 feet, it is probable that this slide will extend further and will eventually require abandonment of the present division office. One shovel is at work removing the material which has fallen into the Cut from this slide.

The total amount of material moving in the three slides just enumerated, all of which have become active, within the past few weeks, amounts to about one and a quarter million

yards, or the equivalent of a little more than one month's Central Division excavation.

Gatun Dam Spillway.

The concrete work in the Spillway at Gatun Dam is over 94 per cent completed, 212,547 cubic yards, out of a total of 225,000, having been placed at the close of work on January 4. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete laid.	Hours worked.	No. mixers used.
December 30.....	Cu. Yds. 220	7.25	1
December 31.....	204	7.75	1
January 1, 1913.....			
January 2.....	190	6.00	1
January 3.....	164	5.75	1
January 4.....	204	7.50	1
Total.....	982	34.25	1
Previously reported...	211,565		
Grand total.....	212,547		

CONCRETE WORK IN THE LOCKS.

Over 94 per cent of the total of 4,446,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on January 4, the amount in place being 4,204,983 cubic yards.

GATUN LOCKS.

Over 93 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on January 4 being 1,916,274 cubic yards, out of a total of 2,043,730. A statement of the amount placed in the locks each working day of the week ending January 4, and of the total, follows; and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers.	Concrete placed.	Hours worked.	No. of mixers.		
December 30.....	Cu. Yds. 258	4.30	2	Cu. Yds. ....	.....	.....	Cu. Yds.	Cu. Yds. 258
December 31.....	202	3.36	2	.....	.....	.....	.....	202
January 1.....	.....	.....	.....	.....	.....	.....	.....	.....
January 2.....	388	6.46	2	.....	.....	.....	.....	388
January 3.....	432	7.20	2	.....	.....	.....	.....	432
January 4.....	548	9.14	2	.....	.....	.....	.....	548
Total.....	1,828	30.46	2	.....	.....	.....	.....	1,828
Previously reported.....	.....	.....	.....	.....	.....	.....	.....	1,914,446
Grand total.....	.....	.....	.....	.....	.....	.....	.....	1,916,274

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 99 per cent completed, 902,277 cubic yards, out of a total of 903,000, bucket measurement, having been placed at the close of work on January 4. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.
December 30.....	327			327	34.50	4			327
December 31.....	243			243	35.00	3			243
January 1.....									
January 2.....				280	24.00	4			280
January 3.....				199	24.50	4			199
January 4.....				299	30.50	4			299
Total.....				1,348	144.50	3.6			1,348
Previously reported.....								4,493	900,929
Grand total.....								4,493	902,277

MIRAFLORES LOCKS.

Over 91 per cent of the concrete for the system of two twin locks at Miraflores was in place December 28, the total amount on that date being 1,375,705 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.						Mixed by hand.	Large stone.	SPILLWAY.			Total.
				1-cubic yard mixers.			½-cubic yard mixers.					1-cubic yard mixers			
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			Concr placed.	Hours worked.	No. of mixers	
December 30.....	Cu. Yds. 1,696	41.67	8	Cu. Yds.			Cu. Yds. 174	21.00	3	Cu. Yds.	Cu. Yds.	Cu. Yds. 171	8.00	1	Cu. Yds. 2,041
December 31.....	2,038	42.17	8				252	25.00	3			144	6.50	1	2,434
January 1.....															
January 2.....	1,888	29.67	8				212	24.00	3			162	7.50	1	2,262
January 3.....	1,816	42.83	8	100	7.50	1	155	24.00	3			180	8.00	1	2,251
January 4.....	1,482	35.17	8	95	8.00	1	132	20.00	2			30	1.50	1	1,739
Total.....	8,920	191.51	8	195	15.50	.40	925	114.00	2.8			687	31.50	1	10,727
Previously reported.....											3,693				1,375,705
Grand total.....											3,693				1,386,432

EMERGENCY DAMS.

Construction Advancing at Gatun—Pedro Miguel Work Begins this Week.

Each emergency dam will contain about 2,350 tons of steel. All of the material for the east dam at Gatun Locks is assembled, all that for the west dam is on the ground and erection has been begun; 840 tons for the east dam at Pedro Miguel lock has been delivered, and 130 tons for the west dam. No deliveries have been made of materials for the emergency dams at Miraflores Locks.

All of the structural material, and the turning and wedging machinery for the east dam at Gatun, have been assembled, and 80 per cent of the 62,000 rivets have been driven. All of the wicket girder and gate hoisting machines have been set in place. Work on the electric cables and conduits is advancing rapidly. The completion of this dam will depend upon the rapidity with which the counterweight of concrete and pig iron, 1,000 tons in all, can be placed upon the short arm of the cantilever, and the operator's house can be erected upon the counterweight. The building of the counterweight will be begun this week.

Installation of the machinery for the turning and wedging machinery has gone hand in hand with the erection of the structural material. The purpose of this machinery is to swing the dam across the approach to the lock, and to wedge it in place. The dam swings upon a pivot in the masonry, and the end containing the counterweight rests upon steel track embedded in the wall. The swinging movement is accomplished by two pinions in mesh with a rack track fixed in the masonry. Each pinion is in mesh with a separate train of gear wheels, which are engaged by an equalizer gear, which has the function of equalizing the tooth pressure on the two main pinions. The equalizer gear is actuated by two motors in the operating house, using alternating current, and especially adapted for intermediate service, because the dam will be turned only at long intervals, and the time of operation will be only two minutes. The motors are capable of developing 110 horsepower in this interval.

Six wedges, two at each end of the dam, and two in the center, will hold the dam in place when it has been swung across the lock approach. These wedges will be driven by machinery. The great force required for this purpose is obtained by means of a double toggle joint near each wedge, actuated by a worm and worm gear driven by a train of gear wheels, which in turn is driven through line shafting by a motor. This motor is installed at the center of the dam, is for alternating current, adapted for intermittent service, and will develop 25 horsepower during the wedging operation.

Machines for hoisting and lowering the wicket girders consist of a train of gear wheels driving a worm and worm gear, which actuate a drum upon which the cable is paid in and out. There is one set of these for each pair of girders, 6 in all on each dam. Each machine is actuated by a separate motor. Machines for lowering the gates in the wickets consist of drums driven through a train of gears connected with a motor. There are a set of five gates in each pair of girders at Gatun and Pedro Miguel dams, and each set is actuated by a separate motor. The construction of one dam requires the installation of 15 motors with various machines that they drive.

Erection work is in progress on the west dam at Gatun. The center pivot upon which the dam swings, and the rack and track segments have been embedded in the concrete. About two-thirds of the vertical trusses, and the intermediate sway frames have been assembled. Only a few rivets have been driven. As soon as the rivetting of the east dam has been finished, in about ten days, the gangs at work there will begin to drive rivets on the west dam, the first work being on the short arm of the cantilever, which has already been assembled. The amount of material erected at present is about 700 tons, or a little less than one-third of the total.

At Pedro Miguel 840 tons of material have been received for the west dam, and 130 tons for the east dam. It is expected that the center pivot and rack track segments for the west dam will be placed this week. Erection will not be at its height however until the middle of February, when it is expected that all of the heavy material in the west dam at Gatun will have been placed, and the crane now in use there can be moved to Pedro Miguel.

Rainy Season Precipitation—1912.

While the rainfall on the Isthmus for the calendar year 1912 was everywhere deficient along the immediate Pacific Coast, the fall during the rainy season of 1912, May to December inclusive, was not materially below the normal for this period, the greater part of the 1912 deficiency occurring during the dry season. The 1912 rainy season totals exceeded the values for the same period in 1911 at all stations except Rio Grande, Camacho, and Monte Lirio.

A comparative statement of the 1911, 1912, and average rainy season precipitation is given in the subjoined table:

STATION.	1911	1912	Average for years of record	1912 per cent of average
Ancon.....	53.92	69.01	66.83	103
Balboa.....	52.74	68.83	64.01	108
Pedro Miguel...	57.42	71.24	78.71	91
Rio Grande.....	74.26	71.72	82.96	86
Culebra.....	69.13	75.45	82.87	91
Camacho.....	76.88	74.79	87.97	85
Empire.....	62.00	71.56	75.87	94
Gamboa.....	65.46	87.03	85.78	101
Alhajuela.....	82.73	83.10	98.36	84
Trinidad.....	83.23	97.20	106.45	91
Monte Lirio.....	103.29	93.75	117.49	80
Gatun.....	87.71	103.81	118.29	88
Brazos Brook...	107.85	120.41	126.27	95
Colon.....	105.48	114.89	118.14	97

*All values are in inches.

Lidgerwood Unloaders in December.

During the month of December 1912, the following Lidgerwood trains and cars were unloaded by the Central Division.

LOCATION.	No. of unloaders.	No. of trains	No. of cars.
Balboa.....	5	1,359	28,539
Miraflores.....	2	391	8,211
Gamboa.....	3	811	17,031
Total.....	10	2,561	53,781

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending January 18, 1913. (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	P.M.	P.M.	P.M.
January 9.....	4.55	11.12	5.25	11.33	
January 10.....	5.34	11.48	5.57		
			A.M.		
January 11.....		12.09	6.07	12.25	6.30
January 12.....		12.45	6.40	1.00	7.02
January 13.....		1.23	7.13	1.34	7.37
January 14.....		2.02	7.48	2.10	8.13
January 15.....		2.44	8.28	2.50	8.55
January 16.....		3.31	9.18	3.40	9.41
January 17.....		4.28	10.18	4.42	10.47
January 18.....		5.32	11.30	5.51	11.57

STEAMSHOVEL RECORDS.

Work of Central Division Machines in December.

During the month of December the total amount of material excavated in the Central Division was 1,074,510 cubic yards, of which 125,264 cubic yards were classified as earth, and 949,246 cubic yards as rock.

Of the total 1,016,866 cubic yards were primary excavation in Canal prism, and 57,644 cubic yards were classified as plant excavation.

The total of 1,074,510 cubic yards was removed by steamshovels.

The high record for the month was made by shovel No. 209 working 18 days in the Empire district and 5 days in the Culebra district, which excavated 51,746 cubic yards of rock.

The second best record for the month was made by shovel No. 262 working 25 days in the Empire district, which excavated 48,393 cubic yards of rock.

The best record for a shovel of the seventy-ton class was made by shovel No. 101 working 23 days in the Obispo Diversion in the Empire district, which excavated 29,892 cubic yards of earth.

Shovel No. 222 working in the Culebra district made a high record for one day by excavating 3,534 cubic yards of rock on December 3.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best records for the month and for one day are shown in the following table:

BEST RECORDS FOR THE MONTH.

SHOVEL No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
212.....		44,247	44,247	25
204.....		44,020	44,020	25
222.....	8,395	33,580	41,975	24
EMPIRE DISTRICT.				
209.....		51,746	51,746	23
262.....		48,393	48,393	25
201.....		43,178	43,178	25

BEST RECORD FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
209	Empire.....	Dec. 9.	Rock.....	3,078
262	Empire.....	Dec. 11.	Rock.....	2,931
209	Empire.....	Dec. 10.	Rock.....	2,907
222	Culebra.....	Dec. 4.	Rock.....	3,534
217	Culebra.....	Dec. 7.	Rock.....	2,679
217	Culebra.....	Dec. 11.	Rock.....	2,508
203	Culebra.....	Dec. 28.	Rock.....	2,451

Immigration at Ports of Ancon and Panama in December.

The number of persons who landed at the ports of Ancon and Panama from foreign ports during the month of December was 398, consisting of 319 cabin, and 79 steerage passengers. The number of persons who embarked for foreign ports was 594 consisting of 449 cabin, and 145 steerage passengers. The number of persons who embarked from these ports over those who landed was 196.

LOST—On December 30, between Ancon Hall and House 166, Ancon, a bank book of International Banking Corporation, check book, and receipt book. Reward for return to B. H. Post, House No. 166, Ancon.

LOST—Will the person who took by mistake a large silk knit scarf on December 3 at the New Year's Eve dance, Kangaroo Hall, Empire please return the same to Mrs. E. R. Moore, House 153-D, Empire, and receive her own in exchange?

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION. MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

M'THS.	CUTTERA SECTION.*											
	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.
Jan.....	70,650	120,900	566,750	1,227,022	1,150,249	1,323,693	1,356,394	1,416,035	169,447	389,399	175,802	255,385
Feb.....	75,200	165,410	636,117	1,246,365	1,104,454	1,259,173	1,409,338	1,349,550	200,145	450,182	286,309	66,145
March.....	132,540	249,175	875,527	1,240,985	1,134,527	1,509,748	1,708,768	1,539,618	324,233	619,491	484,846	172,607
April.....	126,749	213,178	874,522	1,242,574	1,272,746	1,268,545	1,414,336	1,455,216	329,483	510,020	428,777	171,731
May.....	75,935	196,209	690,366	1,240,340	1,226,963	1,099,279	1,209,100	1,405,760	386,170	235,902	288,974	102,103
June.....	76,935	217,628	624,386	1,134,032	1,242,983	1,085,411	1,401,016	1,385,780	322,145	273,900	164,389	8,424
July.....	75,570	157,783	774,550	1,121,325	1,240,828	1,185,841	1,337,833	1,385,501	325,757	233,897	166,106	22,280
August.....	49,210	244,823	786,806	1,127,327	1,173,308	1,379,714	1,442,402	1,094,132	368,683	231,543	234,206	21,892
Sept.....	44,068	291,452	753,469	1,122,801	1,235,978	1,339,574	1,340,173	1,404,173	346,984	235,818	234,206	21,272
Oct.....	52,940	327,009	834,469	1,160,101	1,302,314	1,350,594	1,340,173	1,404,173	426,911	221,409	271,409	12,216
Nov.....	60,630	327,642	790,632	1,022,576	1,070,792	1,209,554	1,209,498	1,173,021	334,930	93,619	260,882	12,246
Dec.....	70,630	307,689	1,025,485	1,210,046	1,152,022	1,221,440	1,351,082	1,074,510	383,948	105,044	197,481	10,809
Totals	914,254	2,702,991	9,177,130	13,912,453	14,557,034	15,398,599	16,596,891	15,028,413	3,787,992	3,752,492	3,153,669	1,037,169

ATLANTIC DIVISION.*

MOS.	GATUN LOCKS, DAM AND SHILLWAY.††											
	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.
Jan.....	292,155	102,690	125,011	65,889	1,330	1,330	1,330	83,726	27,320	15,696	24,969	45,409
Feb.....	282,797	95,031	123,738	50,511	1,228	1,228	1,228	58,282	9,456	6,809	16,010	42,426
Mar.....	374,598	90,051	132,007	51,431	254	254	254	95,624	6,794	283	1,777	77,426
Apr.....	266,747	52,786	82,958	17,677	28,280	28,280	28,280	101,365	1,129	5,905	26,014	29,094
May.....	243,359	36,356	88,988	6,897	1,974	1,974	1,974	77,503	4,410	7,454	7,754	7,906
June.....	188,262	40,346	99,737	2,588	.....	.....	.....	22,648	12,769	2,250	4,866	23,140
Sept.....	145,990	49,945	103,040	3,449	1,025	1,025	1,025	26,853	19,405	3,472	1,613	70,733
Oct.....	154,064	57,321	118,327	1,112	1,700	1,700	1,700	48,875	39,002	7,443	1,287	49,181
Nov.....	18,278	63,452	94,552	.....	2,203	2,203	2,203	55,401	20,207	10,636	3,962	36,081
Dec.....	119,914	96,590	72,030	16,677	.....	.....	.....	65,575	11,195	17,320	3,176	27,598
Totals	2,774,561	793,835	1,284,244	235,082	97,416	97,416	97,416	780,355	740,355	412,309	110,039	318,731

*Total to Jan. 1, 1913, 88,531,237 cubic yards. Ex excavated in 1907, 188,239 cu. yds. were removed by sluicing.

†Dry excavation at Mendi Hills began in July, 1907. There were excavated 172,851 cubic yards, 1907; 590,955 cubic yards 1908; 713,015 cubic yards 1909; 662,995 cubic yards 1910; 56,382 cubic yards 1911; 2,196,198 cubic yards 1912; total to Jan. 1, 2,196,198 cubic yards.

††There were also 78,233 cubic yards excavated at Balboa locks and dams in 1907. There were removed 2,496,523 cubic yards at different points in prism to Jan. 1, 1913. There were also 172 cubic yards removed by steamshovels outside of prism during November, 1908.

*Total to Jan. 1, 1913, 6,506,799 cubic yards; in this total are included 26,628 cubic yards excavated October to December, 1908, and 1,340,179 cubic yards in 1907.

†Total to Jan. 1, 1913, 1,316,750 cubic yards. ††Total to Jan. 1, 1913, 318,731 cubic yards.

WET EXCAVATION.

MOS.	ATLANTIC DIVISION.†											
	1907.	1908.	1909.	1910.	1911.	1912.	1905.	1906.	1907.	1908.	1909.	1910.
Jan.....	111,100	490,701	521,050	510,055	520,151	520,224	.....	95,940	94,710	460,250	469,529	518,936
Feb.....	110,002	427,722	444,910	493,448	485,318	485,318	.....	95,940	92,480	463,519	471,477	285,701
Mar.....	84,145	546,886	461,208	412,325	491,736	103,377	.....	116,820	92,480	785,239	865,696	432,589
Apr.....	69,899	496,366	470,635	190,574	492,579	134,261	.....	110,700	104,385	576,339	534,322	432,589
May.....	135,847	564,386	315,470	447,578	514,178	223,626	.....	123,597	122,457	580,466	720,753	548,309
June.....	124,118	572,749	182,575	458,021	452,098	333,804	.....	123,597	122,457	580,466	720,753	548,309
July.....	109,922	625,497	348,451	423,092	452,195	249,626	.....	98,400	106,336	730,770	844,085	475,389
Aug.....	145,842	624,776	442,446	508,924	429,415	367,436	.....	111,580	168,284	730,770	844,085	475,389
Sept.....	415,120	505,266	314,774	451,783	420,400	372,302	.....	105,780	153,975	730,770	844,085	475,389
Oct.....	422,797	570,832	457,989	600,708	742,242	670,747	.....	97,170	137,122	682,276	720,753	548,309
Nov.....	442,835	679,604	489,121	482,570	535,409	535,409	.....	92,588	365,423	609,089	627,751	367,034
Dec.....	442,835	679,604	489,121	482,570	535,409	535,409	.....	92,588	365,423	609,089	627,751	367,034
Totals	12,621,914	16,742,996	14,839,407	15,528,661	15,785,226	15,267,209	.....	485,153	1,913,233	1,243,789	8,056,025	8,399,498

†Dredges removed 38,425 cubic yards at Gatun Dam site in 1907, and 1,769,977 cubic yards at Gatun Locks in 1908, 1909, and 1912, of which 5,000 were removed in Dec. 1912.

††Ex excavated at Miraflores Locks 309,647 cubic yards in 1910; 176,578 cubic yards in 1911; 9,895 in 1912; total 683,246 cu. yds.

*Total to Jan. 1, 1913, 32,212,978 cu. yds.; in this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906, 683,246 cu. yds.

†Total to Jan. 1, 1913, 36,224,756 cubic yards. ††Total to Jan. 1, 1913, 797,113.

CONCRETE IN LOCKS AND DAMS.

MONTHS.	GATUN LOCKS.†											
	1910.	1911.	1912.	1910.	1911.	1912.	1910.	1911.	1912.	1910.	1911.	1912.
Jan.....	54,136	72,910	34,983	16,273	38,513	15,003	.....	.....	.....	.....	.....	.....
Feb.....	55,696	72,103	26,664	13,218	37,011	12,633	.....	.....	.....	.....	.....	.....
March.....	60,998	86,884	27,532	18,793	44,716	9,331	.....	.....	.....	.....	.....	.....
April.....	63,227	67,361	11,600	24,522	28,635	9,460	.....	.....	.....	.....	.....	.....
May.....	74,273	67,844	7,746	29,576	19,135	10,736	.....	.....	.....	.....	.....	.....
June.....	99,401	55,305	6,095	30,631	18,243	10,061	.....	.....	.....	.....	.....	.....
July.....	84,001	51,046	6,993	41,464	19,406	11,480	.....	.....	.....	.....	.....	.....
Aug.....	55,686	66,928	6,855	51,264	20,736	6,413	.....	.....	.....	.....	.....	.....
Sept.....	76,790	57,498	3,162	50,702	15,379	3,039	.....	.....	.....	.....	.....	.....
Oct.....	86,949	53,636	3,252	61,422	25,657	6,587	.....	.....	.....	.....	.....	.....
Nov.....	75,152	43,907	6,029	64,284	19,622	7,972	.....	.....	.....	.....	.....	.....
Dec.....	80,212	43,590	5,697	42,834	14,360	6,958	.....	.....	.....	.....	.....	.....
Total	886,451	758,821	147,705	444,947	301,893	107,679	.....	.....	.....	.....	.....	.....

Spillway Gatun Dam, March 17, 1909—January 1, 1913, 212,219 cu. yds.

Miraflores Dam, to January 1, 1913, 911 cubic yards.

Pedro Miguel Dam, 503 cubic yards to January 1, 1913.

†116,692 cu. yds. in 1909. ††13,856 cu. yds. in 1909. †††102 cu. yds. in 1909.

FILL PLACED IN DAMS.

MONTHS.	GATUN.*											
	1911.	1911.	1912.	1911.	1912.	1911.	1911.	1912.	1911.	1912.	1911.	1912.
Jan.....	211,992	218,690	173,900	239,266	.....	.....	.....	.....	.....	.....	.....	.....
Feb.....	301,733	211,008	211,399	145,221	.....	.....	.....	.....	.....	.....	.....	.....
Mar.....	362,800	255,047	242,874	229,059	.....	.....	.....	.....	.....	.....	.....	.....
Apr.....	368,654	205,130	204,189	296,956	.....	.....	.....	.....	.....	.....	.....	.....
May.....	412,408	207,751	194,733	227,017	.....	.....	.....	.....	.....	.....	.....	.....
June.....	439,088	227,996	160,688	193,110	.....	.....	.....	.....	.....	.....	.....	.....
July.....	329,947	201,996	108,163	207,405	.....	.....	.....	.....	.....	.....	.....	.....
Aug.....	259,889	232,436	184,389	201,029	.....	.....	.....	.....	.....	.....	.....	.....
Sept.....	261,838	194,497	62,666	183,000	.....	.....	.....	.....	.....	.....	.....	.....
Oct.....	261,320	218,305	.....	188,485	.....	.....	.....	.....	.....	.....	.....	.....
Nov.....	266,603	207,157	.....	184,485	.....	.....	.....	.....	.....	.....	.....	.....
Dec.....	89,752	233,063	.....	142,245	.....	.....	.....	.....	.....	.....	.....	.....
Total	3,493,388	2,613,066	1,402,501	2,499,092	57,669	352,189	.....	.....	.....	.....	.....	.....

*Wet fill to Jan. 1, 1911, 5,833,076 cu. y.; Dry fill to Jan. 1, 1911, 6,128,105 cu. y.

†Dry fill to Jan. 1, 1911, 260,852 cu. y.

††Wet fill to Jan. 1, 1911, 294,712 cu. y. Dry fill to Jan. 1, 1911, 609,963 cu. y.

CANAL EXCAVATION TO DATE.

By French Companies,..... 78,146,960

French excavation useful to present Canal..... 29,908,000

By Americans—

LIGHTING THE LOCKS.

System Provides for Thorough Illumination.

Exhaustive studies of the illumination of the locks have been made in order that a distribution of light best suited to all of the conditions may be secured. A few concrete lamp posts have been erected on the walls of the upper locks at Gatun, and a pair of bracket arms for trial are being cast at the Gatun concrete yard.

Lighting of the locks divides itself into three distinct classes—exterior, interior, and machinery room. A different system and a different lamp unit are required for each class. An effort has been made to design a distribution which will produce a correct illumination in a pleasing manner, with attractive fixtures, illumination of proper intensity and distribution, and the direct light of the lamp (intrinsic brilliancy of the filament) causing the least possible inconvenience to the eye; in short, an installation that will approach sunlight distribution as closely as possible. Advances during recent years in lamp manufacture make it possible to obtain nearly white light by the use of the metallic filament lamp, and to obtain nearly uniform distribution of lighting flux by the use of a properly designed reflector.

EXTERIOR LIGHTS.

The exterior lamp installation at the locks is somewhat at a disadvantage. Inasmuch

the lock chamber. Isolux diagrams have been constructed to give a graphical representation

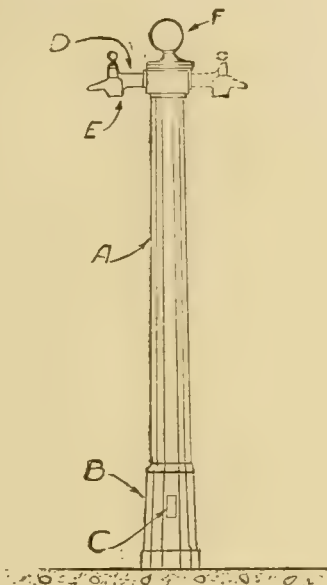


FIG 1—LAMP STANDARD

A. Post, B. Pedestal, C. Outlet Box, D. Bracket, E. Reflector, F. Cap.

of the distribution of the lighting flux. Differ-

0.25 and 0.1 foot-candles. The entire reflector, with lamp and socket, is to be weather-proof, suited in every respect to resist the deleterious effects of tropical deterioration.

The exterior lamp units are to be set thirty feet above the coping, bracketed from an ornamental concrete lamp standard. The standards are aligned longitudinally and transversely, alternate lamps being spaced on from fifty to sixty-foot centers. The general design of the standard and concrete bracket reflector are shown in Fig. 1, and the position of the standards relative to the lock chambers is shown in Fig. 2. The proportions of the standards are massive, conforming to the heavy construction of the masonry. The standard is 12-sided and tapers from 1 foot 10 inches at the top to 3 feet six inches at the base of the pedestal. It is planned to build the larger portion of the pedestals in position, and to cast the columns in the yard, erecting the latter with a crane. Ten columns and several additional pedestals have already been erected at the Gatun Locks. Both the pedestal and column contain a large core, serving the double purpose of reducing the weight and of furnishing a runway for the electric wires. About $3\frac{1}{2}$ yards of concrete and 750 pounds of steel reinforcement will be required in the construction of each standard, of which there is a total of 511—211 at Gatun, 131 at Pedro Miguel, and 169 at Miraflores.

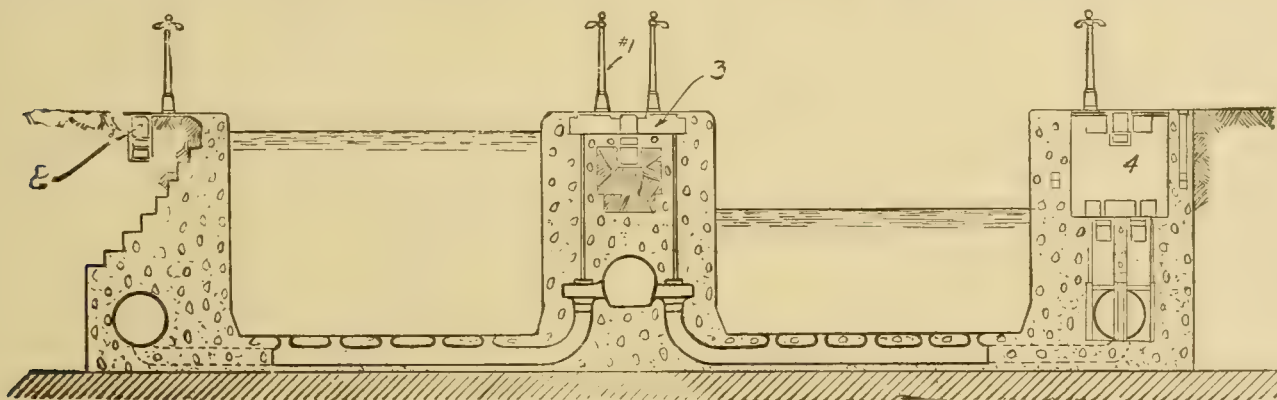


FIG. 2—CROSS SECTION OF LOCKS SHOWING ILLUMINATION SYSTEM.

1 Lamp Post. 2 Operating Tunnel. 3 Cylindrical Valve Room. 4 Rising Stem Valve Room.

as ships are to traverse the Canal at night, it is necessary that an excellent intensity be maintained on the coping and in the water chamber, and, furthermore, it is of prime importance that brilliant sources of illumination be shaded from the eye of an approaching pilot, permitting thereby an unhampered vision of all range and signal lights. The eye can untiringly accommodate itself, with excellent vision, to a very low intensity of illumination, such as moonlight, provided there exist no random interference possessing a relatively intense brilliancy. Any bright spot, however, renders vision indistinct, difficult, and fatiguing.

In the selection of exterior lamp units, a thorough investigation was made of different types of lamps and reflectors, and tests were conducted at Gatun Locks to determine the general characteristics and suitability of certain promising lamp and reflector units. The usual method employed in investigating a lamp characteristic has been to take its distribution curves, and to calculate the theoretical illumination at several points both on the wall coping and on the water surface in

ent illuminations are produced for different heights of lamp, and it was necessary to determine, in addition to a proper intensity, a proper height of the illuminating source.

The type of outside lamp finally selected is a large power tungsten bulb (400 watt) set in a concrete hood. The area to be illuminated extends three hundred feet back of the lock chamber, necessitating two types of lamp standards—single bracket and double bracket. The single bracket standards are to be used on the center wall, where the lamps are staggered so as to illuminate both lock chambers. The double bracket is to be used on the side wall, where it is desired to throw the lighting flux back of the lock chamber, for a considerable distance. The reflector is to be cast of concrete, and provided with shading skirts, which will prevent the glare of the lamp filament from penetrating into distance along the axis of the Canal, for the skirts will cut off the direct rays on the coping level at approximately forty one feet from the center of the post. The illumination on the lock coping will probably vary between the limits of 0.7 and 0.1 footcandles, and on the upper water surface of the chamber, between

Electrically, the lamps are connected alternately upon separate circuits, providing thereby a duplication of wiring, as well as a means of economical operation whenever only half illumination may be required on bright moonlight nights. Arrangement is made in the wiring so that all the lamp circuits are remotely controlled by the attendant in the control house—the operating center for all the lock machinery and indicating apparatus. Remote control is accomplished through solenoid-operated circuit-breakers, the main contacts of which connect the lamp circuit) to the lighting bus of each transformer room,* the solenoid being connected to the control wires which are run from the transformer rooms to the control house.

Each lamp standard is to be provided with a special outlet box, located in the concrete pedestal. The outlet box is to permit the insertion of plugs to connect up a portable lamp circuit and a portable telephone circuit. A portable lamp may be required at any moment in the operation of the locks to place light on an electric locomotive or on the deck

*Transformer rooms described in *The Canal Record* of April 10, 1912.

of a passing vessel. A portable telephone is to permit a supervisor of lockages to communicate with the central control-house from any position on the lock walls. The outlet is placed in the pedestal of the lamp standard merely as a matter of operating convenience during lockages, the standards being accessible throughout the entire length of the lock walls. The box is to be made of bronze and will be provided with a hinged waterproof cover as a protection against the elements.

INTERIOR ILLUMINATION.

The interior illumination—operating tunnel and machine rooms—is illustrated to a certain extent in Fig. No. 2. The tunnel, which connects the various machine rooms and operating centers, is seven feet in height, the floor being eight feet below the coping level. The tunnel is to be lighted normally during daylight hours through deck-lights located in the tunnel ceiling and spaced longitudinally on fifteen-foot centers. For illumination at night and on dark days, small 16 candle-power carbon-filament lamps (or 25-watt tungstens) are to be set in recesses in the tunnel ceiling, the lamps alternating with the deck lights on fifteen-foot longitudinal spacing. A special reflector will be cast from concrete and so designed that a proper diffusion of the light along the operating tunnel may be accomplished without a severe glare of the lamp filament striking the eye. There will be a total of 2,041 tunnel reflectors—952 at Gatun, 677 at Miraflores, and 412 at Pedro Miguel.

LIGHTS IN MACHINE ROOMS.

The machine room lamps and reflectors differ from the tunnel lamps only in the shape of the reflector, which will also be cast of concrete. Instead of being set in the ceiling, the machine room reflectors are to be grouted into recesses in the side walls, about six feet above the floor line. They are designed to throw the lighting flux outward and downward over the machines, and a cut-off screen (a concrete panel) is provided to prevent the glare of the lamp filament from striking the eye. During the day natural light will penetrate the machine rooms through manhole covers, which are equipped with small glass prisms. The location of the various machine rooms is shown in Fig. No. 2. There will be a total of 4,751 machine room reflectors—2,101 at Gatun, 1,524 at Miraflores, and 1,126 at Pedro Miguel.

Both the tunnel and machine room lamps are fed from panel boards (total number, 66) distributed throughout the lock walls. The panel boards are of the fused, branch-circuit type, with both main switch and branch switches. Eight hundred additional circuit switches are distributed among the machine rooms, breaking the circuits from the panel boards into smaller groups. Seven hundred receptacles for portable lamps are also provided among the various machine rooms.

All lighting is to be upon a 110—220-volt, 25-cycle, alternating-current, three-wire Edison system. The copper wires possess large cross-section area to produce a minimum drop and a consequential excellent regulation. Special provision will be made to obtain unusually excellent insulation. Joints will be avoided, the wires being looped into the lamp and receptacle terminals wherever practicable. The wires for lighting circuits will be run in longitudinal chases which are cast into the

upper corners of the operating tunnel. The chases are T-shaped and will be covered with concrete after installation of the wires. Branch chases connect to all recesses and to all machine room lamps.

Society of the Chagres.

At a recent meeting of the Executive Committee it was decided to hold the Annual Meeting and Banquet of the Society at the Hotel Tivoli, Ancon, on the night of February 21, 1913.

Tickets to the banquet will cost \$3 each and will be ready for issue on or about February 10. Prior to that time a plan of the table arrangements will be furnished each member and he will be requested to advise the undersigned where or near whom he desires to sit. It is suggested that members from each community consult on this question and group themselves, in order that everyone may have neighbors with whom he is acquainted. Seating requests will be followed as closely as possible, but as it is expected that about four hundred members will attend the banquet, it will not be possible to conform in all instances, so preference will be given to those requests which are received earliest. When the tickets are mailed there will be enclosed with each a completed plan of the seating arrangements with a list of those who will attend. Opposite each name will be shown the seat number to which member has been assigned, and this same number will also appear on ticket. This will eliminate delay and confusion in seating.

A canvas of the votes received for officers for the ensuing year will be made at the Annual Meeting and those elected will assume office.

A special train for members of the Society only will leave Colon at about six o'clock p. m., February 21, and returning leave Panama at about one o'clock a. m., February 22, 1913. As Panama will be crowded with visitors all during the month of February, members who desire to spend the night there are advised to make room reservations at the various hotels several weeks in advance.

It is desired to make this banquet the most successful ever given on the Isthmus by any organization, and to this end the cooperation of every member is earnestly requested. Suggestions are welcome.

W. F. SHIPLEY, *Secretary-Treasurer*.
Cristobal, C. Z., December 21, 1912.

Church Notes.

Empire Union Sunday school held a semiannual election of officers at the session on December 31. The Rev. A. A. Nellis, chaplain of the Christian League, was chosen superintendent; Mr. Garwood, assistant superintendent; Miss Marion Blake, secretary; and Mrs. Philip Kelly, treasurer. The Sunday school has an enrollment of 140 and the average attendance for the past six months has been 125.

The Empire Christian League held its semiannual meeting with election of officers in the Commission chapel on Tuesday evening, January 7. Following the business meeting there was a short program of music and a reception was held in honor of Mr. and Mrs. E. P. Beck, who are leaving for their home in Oregon on January 23. Mr. and Mrs. Beck have been active workers in the Empire church since 1907. At one time, Mrs. Beck

was president of the women's section of the Christian League.

The monthly meeting of the Isthmian Minister's Association was held at Gatun on Monday, January 6. The Rev. Charles O. Purdy, chaplain of the Union Church, was the speaker.

On Saturday evening, January 4, the Catholic Club at Empire held a "hard time" dance.

Bishop Knight's Visit Postponed.

A cable message received by the General Missionary of the Panama Mission of the Episcopal Church states that the visit of the bishop of Cuba has been postponed until March. Bishop Knight was expected to arrive in Colon on January 8.

Secret Societies.

The first annual election of officers in Orchid Chapter, Gorgona No. 1, Order of the Eastern Star, was held on Saturday, December 29, and the installation will be on Saturday evening, January 10. The roster is as follows: Worthy Matron, Mrs. Eleanor Babbitt; Worthy Patron, John Devers; Assistant matron, Mrs. Laura Whipple; conductress, Mrs. Minnie Kosier; assistant conductress, Mrs. Anges McCombs; secretary, Mrs. Katherine Casey; treasurer, Mrs. Emma Fahr. The five points of the star are represented by Mrs. Cecil Lowe, Mrs. Stanner, Miss Ida Jordan, Mrs. Anna Lucavie and Mrs. Emma Wilson. The order was installed on October 25, 1910, by the Rev. Willis D. Engle, Most Worthy Grand Patron, who came from Indianapolis for that purpose. On August 25, 1912, the Order gave a ball at the Commission clubhouse, Gorgona. There are 85 members, this being the largest membership of any organization of women in the Canal Zone.

The second largest women's organization, Isthmian lodge, the Daughters of Rebekah, Gorgona No. 1, will install officers for the ensuing year on January 10. Mrs. Marie Jansen will be the Noble Grand, Mrs. Harry Rhodes, vice grand, Mrs. M. Perry, secretary and Mrs. W. Vickery treasurer. Mrs. W. E. McCann is leaving the chair at this installation. The membership is 60. The order was instituted on October 10, 1908.

I. O. O. F.

District Deputy Grand Sire, B. F. Sisson and suite were present at the 1st meeting of Canal Zone Lodge No. 3, Independent Order of Odd Fellows, on Saturday evening, January 4, and installed the newly elected officers as follows: Noble Grand, Randall T. Bradberry; Vice Grand, William J. McLaughlin; Secretary, Rev. J. L. Wise; Treasurer, Bruno Balduf.

The appointive officers of the lodge were also installed.

The various lodges of Odd Fellows in the Canal Zone are preparing a souvenir booklet containing a history of the organization with a list of the members.

United Spanish War Veterans.

A special meeting of Chagres Camp No. 1 will be held in Kangaroo Hall, Empire, Sunday, January 12, at 3 p. m., for the purpose of a double installation of the officers of Chagres and Ladies' Auxiliary Camps, Refreshments will be served.

Cristobal Union Church.

The Christain Endeavor Society of the Union Church at Cristobal will hold a business meeting for the election of officers on Friday night, January 10, between 7 and 8. All members are requested to be present.

Missing Men.

Anyone having information regarding the whereabouts of the following named men, who are supposed to be on the Isthmus, is requested to communicate with the American Legation, Panama: Scott Michael Rogers Beck, J. H. Strong, and C. M. Connor.

Anyone having information regarding the whereabouts of the following named men, who are supposed to be on the Isthmus, is requested to communicate with THE CANAL RECORD, Ancon: John or Jack Forrester, or Jack Darling, Jack Waters, and Edward B. Harrison.

Band Concert.

A concert will be given by the Isthmian Canal Commission band at Corozal, C. Z., on Sunday, January 12 at 4.30 p. m. The program follows:

1. March—*Wien bleibt Wien*.....Schramme
2. Selection—*The Rose Maid*.....Granichstaedten
3. Intermezzo—*In the Shadows*.....Finck
4. Overture—*Stradella*.....Flotow
5. Popular Song—*Moonlight Bay*.....Wenrich
6. (a) An Old-time Shuffle—*The Darkies'*
Dream.....Lansing
- (b) Danza—*Paca*.....Lansing
7. Descriptive—*Evening Idyls*.....Barnhouse
- Sunset, Evening Festivities, Dreamland.
8. Waltz—*Blue Danube*.....Strauss
9. March—*Distant Greeting*.....Doring

CHARLES E. JENNINGS, Musical Director.

The next concert will be given at Empire, January 19 at 6 p. m.

Misdirected Letters.

ANCON, C. Z., January 8, 1913.

The following insufficiently addressed letters, originating in the United States or its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressee:

Alexander, Tom	Kanzer, F.
Barrett, J.	Lancer, Thomas D.
Barton, Aldrich	Lister, George
Belanger, Charles (pkg.)	Lord, Benj. Garrett
Bentley, George J.	McArthur, Mrs. Naomi
Beutell, Joe M.	McLoughlin, Debbis (3)
Bracker, C.	Mead, Chas. E.
Brown, E. R.	Melgord, J. J.
Bydell, Walter	Menninger, Mrs. Cliff
Caines, Edward P.	Myster, Dan
Clymer, E. H.	Ogden, Morton M.
Clausell, L. Albert	Parker, Foster T.
Davenport, Mrs. W.H. (pkg.)	Peters, Geo. J.
Davis, Arnold N.	Prochaska, John (pamp't)
Debowski, C. A.	Quick, Dane
Downes, Eugene	Reese, P. W.
Durston, Gilbert H.	Teeve, A. B.
Eggleston, A. C.	Reynolds, Sam'l
Flanerty, M.	Roberts, Ralph W.
Flanagan, Harry (3)	Rosseter, Mrs. John H.
Frances, Canute (pkg.)	Rossite, L. J.
Gilbridge, Barney	Russell, Chas. B. (2)
Greenway, Ester	Sealy, Percy
Hall, Frank E.	Shore, Charles P. (pkg.)
Herbruger, Florence Chas.	Smith, Julian P.
Hall, Arthur E.	Stevens, George
Hichcock, William	Strong, J. H.
Holland, Mrs. Mary	Thomas, I. J.
Holleman, M. G.	Tracy, William L.
Jackson, Daniel	Turner, John
James, R. E.	Vaughn, Horace, W.
James, W. H.	White, Miss Margret (pkg)
Juergens, H. F.	

Lost—On Sunday, December 15, near the Mount Hope railroad station, mileage book No. 9,269. Finder will please return to Box No. 144, Paraiso, and receive reward.

Lost—On some engine tying up at the Pedro Miguel engine house, a 12-size, thin model, 20-year case Elgin watch, together with metal check No. 136646. Finder will please leave at the engine house office, Pedro Miguel.

Lost—On January 2, either on noon train from Gatun to Colon, or in the railroad stations, an open face, gold, lady's watch with shark tooth fob attached. Finder will please return to Miriam Stevens, Cristobal, and receive suitable reward.

Lost—A Folding Brownie camera; was left on a seat at Cristobal Beach, Sunday evening, January 5, at 7 o'clock. Please return to house No. 241-A, Cristobal, and receive reward.

COMMISSION CLUBHOUSES.**Activities of the Young Men's Christian Association.****GENERAL.**

The meetings of the Forum, which were discontinued during the holidays will be resumed next week. Dr. A. J. Orenstein will deliver a stereopticon lecture on "Alcohol" at the following places on the dates named: Sunday, January 12, Corozal; Monday, January 13, Gatun; Wednesday, January 15, Cristobal; Thursday, January 16, Gorgona; Friday, January 17, Empire.

Miss MacLaren's date of sailing has been changed from January 8 to the 15th. Her last appearance will be at Pedro Miguel, on January 13, in the "County Chairman."

Dr. Edward T. Devine, Professor of Social Economy, Columbia University, Secretary of the Charity Organization Society of New York, and a world wide authority on economics will speak at the various clubhouses on the topic "The Abolition of Poverty" on the following dates: January 22, Cristobal; January 23, Gatun; January 24, Culebra; January 25, Empire; January 26, Corozal; January 27, Gorgona. Special music will be furnished at all of these events.

The Edith Harris Scott Concert Company will tour the Isthmus under the clubhouse supervision in February. The company is composed of Mrs. Grave Hall, a church soprano of Pittsburg, Mr. C. E. McAfee, concert pianist, Mr. Karl Malcherek, violinist, a former concertmeister of the Pittsburg orchestra, and Mrs. Edith Harris Scott, contralto, a well known concert singer and reader.

COROZAL.

The new class in Spanish started on Monday, December 30, and will meet on Tuesdays and Fridays.

The Corozal boys defeated the Balboa boys in a closely contested baseball game at Corozal on Saturday, January 4.

Gatun duckpin bowlers won three games from the Corozal team on the latter's alleys on Saturday night, January 4, with the following scores:

Gatun.				Corozal.			
Carlson....	71	97	85	Tougher....	89	77	74
Harper.....	72	87	90	Ryan.....	67	74	
Gibson.....	84	93	78	Harper.....			89
Sims.....	70	82	89	Sims.....	77		
Morrissey....	95	91	88	Wilkins....	85	86	
				Webb.....	99	89	94
				Patrick....	62	72	
				Bartlett....		83	
Totals....	401	450	430		394	406	426

The following are the high duckpin scores made during the week ending January 4: Souder, 103; Dalton, 103; Wilkins, 107; Sims, 123; Owens, 100; Webb, 103; Bartlett, 106. The only 200 score in tenpins was Wilkins' 211 score.

CULEBRA.

Approval has been given by the Acting Chairman for the construction of a reading room and library which will be located under the Quartermaster's Office, opening from the pool room.

Moving pictures will be shown on Saturday night, January 11, instead of on the date formerly announced.

Mr. Mengel won the prize for high score in bigpins and Mr. Brown the prize for high score in duckpins during the month of December, scores being 225 and 135, respectively.

EMPIRE.

The rag-time duckpin tournament for men, which opened on December 15, is about half over at the present time. Rodeighiro and Huson are first in the doubles with 642 pins for three games. Rodeighiro is first for single high score with 142 pins, Pinney is second with 139 pins. All games must be bowled by February 1.

The first aid class meets every Monday from 7 to 8 p. m. This class is open to all.

Miss MacLaren will read "The Music Master" at 8.15 o'clock Sunday night

GORGONA.

A smoker held on December 31 was attended by 400 men. The program was as follows:

Orchestra, 10th Infantry, several selections; Emery and Cogan; tenor solos by Messrs. Ringer, and Onkan; Bass solos by Messrs. Case and Kelly; Baton swinging by Mr. Kramer; piano solos by Mr. Wright; Wrestling bouts by Messrs. Shulte and Guinn, followed by Messrs. Brain and Dr. Funk. Refreshments and singing old folk songs.

The regular program will be continued as follows: Wrestling classes, Monday and Friday of each week; Boys classes, Tuesday and Friday afternoons; and the Ladies class on Friday afternoon. The Gorgona chorus will continue regular rehearsals on Wednesday of each week and will give a concert as soon as they are ready.

The following are high bowling scores for the week: Duckpins—King 100, 105, 100; Powell 103; Simka

102; Sims 103, 112, 116; Trieber 100; Moyer, 105; Davis 107, 102, 100, 105; Denst 100, 102, 110.

The December tenpin tournament resulted as follows:

	Won	Lost
Roper.....	26	4
Powell.....	18	12
Kepler.....	19	14
High average—Roper, 177		
High score—Powell, 244.		

GATUN.

"Open house" was held all day on New Year's Day. Volley ball was played in the morning. The boys' half mile race held outdoors at noon resulted: First, J. D. Garrison; second, Charlie Gray; third, Homer Garrison. P. K. Martinoff won the men's half mile run. In the afternoon the "Smiths" defeated the "Woolworths" in a tenpin match. In the evening the "Married Men" defeated the "Seniors" in a game of volley ball. The "Hubers" defeated the "Whistons" in a match game of basketball. Several athletic contests were held for the boys.

Gatun defeated Corozal in three games of duckpins on Saturday, January 4. The same evening Culebra defeated Gatun in four out of five games of volley ball.

A local volley ball tournament will be organized in the near future.

Mr. W. B. Childers has been appointed a member of the Gatun Y. M. C. A. Executive Council.

Miss Cervera of Panama city will play several piano selections at a meeting of "The Forum" to be held on Thursday, January 23.

CRISTOBAL.

On Wednesday night, January 1, there was an attendance of 175. Mr. G. K. Weston sang, and used illustrated slides. The next moving picture date for Cristobal is January 10.

On New Year's day there was free pool all day with tables in constant use. Forty five games were played with one hundred and eleven players using the pool room.

The married men's gymnasium class will meet weekly on Monday and Thursday nights at 8 p. m., under Mr. Schulte, the physical director.

The duck pin bowling contest held on December 31, and January 1, for the championship of the Isthmus resulted as follows:

Five-man Team Event.

1. Cristobal team.....	1,327
2. Gatun team.....	1,306
3. Empire team.....	1,297
4. Corozal team.....	1,206

Singles.

1. Herrington, Cristobal.....	304
2. Claherty, Gatun.....	291
3. DePolter, Gatun.....	283

Doubles.

1. Barrett and Bullard, Cristobal.....	574
2. Mosher and Herrington, Cristobal.....	566
3. Smith and Weston, Cristobal.....	562

High Score for the Day.

Claherty, Gatun.....	111
Herrington, Cristobal.....	111

(Claherty won on the roll off.)

Points on Point Trophy.

Cristobal.....	21½
Gatun.....	7½
Empire.....	1
Corozal.....	½

(Gorgona and Culebra forfeited.)

78 entries were made and 40 different men from the six associations participated.

A local duckpin league tournament will be started January 13.

PORTO BELLO.

Practically all the residents of Porto Bello participated in the outing given under the auspices of the Sunday school on New Year's Day. The picnic was held in the little cove just at the entrance to Porto Bello Bay. Messrs. Conklin, and Quayle loaned their launches for the occasion. After a dinner served by the ladies, athletic events were run off as follows: Tug of war, boys vs. girls—Girls won; tug of war, five men teams representing transportation, steamshovel, shopmen and clericals—won by transportation, Mr. VanVoy, captain; three legged race (children)—Pauline Smith and Ruth Reichart won; four legged race (men)—won by Mr. Urwiler; wheel barrow race (men)—Won by Urwiler and Woods; 100-yard dash (men)—Hoehne, first, Woods second; 50-yard swim (men), Hoehne first, MacDonald second; 25-yard swim, men, vs. ladies, men handicapped 5 yards, Hoehne first, Miss Warner, second; 40-yard swim for boys, Claude Smith first, Irwin Buser second, Howard Geyer third; 20 yard swim for girls, Pauline Smith first, Lilian Quinn second, Dorothy Reichart third. The request has been made that another outing be arranged for Washington's Birthday.

J. L. Tolar will give an illustrated address on "Cuba" on Sunday night, January 11. The following Sunday night the "Life of Moses" with stereopticon views will be the subject of a lecture by Mr. Page.

OFFICIAL CIRCULARS.

Restrictions in the Use of Water during the Dry Season.

CULEBRA, C. Z., December 31, 1912.

CIRCULAR No. 183-E:

A necessity exists for restricting the use of water from the Camacho, Rio Grande, and Cocoli reservoirs during the dry season.

The use of garden and other hose for watering plants and flowers is prohibited except by authorized gardeners and employees of the Quartermaster's Department.

District Quartermasters are directed to report all leaks in faucets or pipes and all violations of this order.

H. H. ROUSSEAU, Acting Chairman.

Acting Disbursing Officer.

CULEBRA, C. Z., December 31, 1912.

CIRCULAR No. 472.

The duties of the Disbursing Officer on the Isthmus will be assumed by Mr. William M. Wood on January 1, 1913, to serve in that capacity during the absence of Mr. Edward J. Williams, on leave.

H. H. ROUSSEAU, Acting Chairman.

Acting Examiner of Accounts.

CULEBRA, C. Z., December 31, 1912.

CIRCULAR No. 471.

Effective January 2, 1913, Mr. T. L. Clear will act as Examiner of Accounts during the absence of Mr. A. A. Smith.

H. H. ROUSSEAU, Acting Chairman.

CULEBRA, C. Z., January 3, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

Please make special efforts to release flat cars promptly during the next five days, on account of lumber at Balboa and Colon waiting for cars.

H. H. ROUSSEAU, Acting Chairman.

Proposals for Furnishing Plants and Seeds.

OFFICE OF DEPOT QUARTERMASTER,

MOUNT HOPE, C. Z., January 6, 1913.

Sealed proposals will be received at the office of the Depot Quartermaster, Mount Hope, until three o'clock p. m., February 1, 1913, when they will be opened in the presence of attending bidders, for furnishing, in cars at any station on the Panama railroad, 1,200 cocoanuts, 1,000 sugar cane plants and 5,000 white yam heads for planting; 1,000 banana plants, 1,000 plantain plants, one bushel seed sweet potatoes, two bushels Kafir corn seed, and two bushels sorghum cane seed. Best quality only is desired and samples must be submitted. Proposals should show unit prices. Cocoanuts are to be supplied at earliest practicable date and the other items to be delivered during April 1913. The right is reserved to reject any or all bids, or any combination of bids. Envelopes must be plainly marked; "Proposals for furnishing plants and seeds, to be opened February 1, 1913," and addressed to

C. NIXON,
Purchasing Agent on the Isthmus.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon and Balboa, during the week ending January 4:

Corrillo, December 29, from New York, with 21 cases valve parts for Superintendent of Erection; 8 cases solder, 63 cases water coolers, 12 pieces steel channels, 200 pieces steel angles, 18 cases hardware, for stock.

Tricolor, December 30, from San Francisco, with 818 pieces Douglas fir lumber, for Atlantic and Pacific Divisions; 2,525 switch ties, 271 pieces piling, 30,344 pieces Douglas fir lumber for stock.

Mackinaw, December 28, from San Francisco, with 640 bales hay, for stock.

Pennsylvania, December 28, from San Francisco, with 59 cases of babbit metal, for stock; 8 bales dredge sleeves for 6th division Chief Engineer's Office.

Prinz Eitel Friedrich, December 30, from New York with 8 reels, steel hawsers, for Atlantic Division; 157 pieces structural steel, 11 bundles structural steel, 23 cases structural steel for Panama Railroad Company.

Asian, December 30, from Liverpool with 600 barrels carbolic acid, for stock; 2 pieces hoisting chain, for 6th division Chief Engineer's Office.

Santa Maria, January 1, from New York, with 27 cases electrical material, 7 reels cable, for Superintendent of Erection; 5 cases electrical material for Panama Railroad Company; 60 cases putty, 60 cases varnish, 50 crates galvanized buckets, for stock.

Haakon VII, January 2, from Fernandina, with 2,737 pieces piling, 2,996 pieces yellow pine lumber, for stock.

Atenas, January 2, from New Orleans, with 1,163 pieces yellow pine lumber, 16 pieces piling, 167 pieces cross ties, 413 sacks feed, 320 pieces pipe, 15 bundles

pipe fittings, 200 cases cup grease, 50 pieces steel castings, for stock.

Allianca, January 3, from New York, with 6,000 pieces splice bars, 116 kegs bolts, 1,194 cases sashes, 13 barrels tiling, for Panama Railroad Company; 39 reels cable, 21 cases electrical material, for Superintendent of Erection; 20 crates handles, 68 cases caustic soda, 360 cases linseed oil, 40 bales oakum, 30 cases napkins, for stock; 90 barrels potash, for Mechanical Division; 25 cases rubber boots, for Atlantic Division; and a miscellaneous cargo, the whole consisting of 5,200 packages, weighing 260 tons.

Norhilda, January 3, from Baltimore, with 13,000 cases of dynamite, for stock; 1,629 bundles steel bars, for 6th division Chief Engineer's Office; 185 bundles steel bars, for Atlantic Division; 180 packages rack castings, 8 cases gate machinery, 237 cases valve parts, for Superintendent of Erection.

Rainfall from December 1 to 31, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>			
Ancon.....	1.14	30	3.27
Balboa.....	1.84	30	4.94
*Miraflores.....	4.04	30	6.75
Pedro Miguel.....	1.26	15	3.91
Rio Grande.....	1.46	30	4.04
<i>Central Section—</i>			
Culebra.....	1.95	30	4.87
*Camacho.....	.65	29	3.46
Empire.....	1.47	30	3.71
Gamboa.....	1.15	10	3.63
*Jaun Mina.....	.52	30	2.02
Alhajuela.....	.91	30	2.20
*El Vigia.....	.44	30	1.53
*Gorgona.....	1.10	15	4.80
*Frijoles.....	.90	15	5.65
*Trinidad.....	1.30	16	5.61
*Monte Lirio.....	1.50	16	5.24
<i>Atlantic Section—</i>			
Gatun.....	2.52	16	9.82
*Brazos Brook.....	1.80	15	9.63
Colon.....	2.20	15	11.47
Porto Bello.....	3.37	30	11.52

*Standard rain gage—readings at 5 p. m. daily
Automatic rain gage at unstarred stations—values midnight to midnight.

December Rainfall for Three Years.

STATIONS.	1910	1911	1912	Station Av.	Years of record	Rail days 1912
<i>Pacific Section—</i>						
Ancon.....	10.63	1.99	3.27	4.18	16	13
Balboa.....	9.79	1.36	4.94	5.98	14	14
Miraflores.....	8.41	1.40	6.75	8.16	5	11
Pedro Miguel.....	9.61	1.82	3.91	7.38	5	12
Rio Grande.....	10.90	1.27	4.04	5.93	8	13
<i>Central Section—</i>						
Culebra.....	11.86	.31	4.87	7.68	22	15
Camacho.....	11.65	1.34	3.46	6.64	7	15
Empire.....	9.06	.20	3.71	5.57	9	16
Gamboa.....	13.11	.97	3.63	6.97	30	18
Juan Mina.....	16.61	.64	2.02	6.42	3	12
Alhajuela.....	15.49	.39	2.20	7.08	14	17
El Vigia.....	16.01	.45	1.53	6.52	5	16
Gorgona.....	15.71	1.01	4.80	7.03	8	19
Frijoles.....	21.64	3.09	5.61	11.21	5	22
Trinidad.....	23.96	2.30	5.24	11.09	6	18
<i>Atlantic Section—</i>						
Gatun.....	19.24	2.25	9.82	13.38	8	24
Brazos Brook.....	20.15	1.86	9.63	14.19	7	26
Colon.....	15.20	2.63	11.47	12.31	42	21
Porto Bello.....	22.89	2.16	11.52	22.33	6	26

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, January 4, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela	Gamboa.	Gatun Lake.
Sun. December 29.....	127.5	93.7	48.8	48.3
Mon. December 30.....	127.7	93.8	48.7	48.3
Tues. December 31.....	127.5	93.7	48.8	48.3
Wed. January 1, 1913.....	127.4	93.6	48.6*	48.3
Thurs. January 2.....	127.0	93.2	48.4	48.3
Fri. January 3.....	126.8	93.0	48.3	48.3
Sat. January 4.....	126.6	93.0	48.2	48.2
Height of low water to nearest foot.....	125.0	91.0	44.0	

*Elevations, after 1st of year changed to W. S. R. heights.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Colon.....	P. R. R. Friday.....	Jan. 3
Advance.....	P. R. R. Thursday.....	Jan. 9
Panama.....	P. R. R. Wednesday.....	Jan. 15
Allianca.....	P. R. R. Tuesday.....	Jan. 21
Colon.....	P. R. R. Tuesday.....	Jan. 28
Advance.....	P. R. R. Monday.....	Feb. 3
Panama.....	P. R. R. Monday.....	Feb. 10
Allianca.....	P. R. R. Saturday.....	Feb. 15
Colon.....	P. R. R. Friday.....	Feb. 21
Advance.....	P. R. R. Friday.....	Feb. 28
Panama.....	P. R. R. Friday.....	Mar. 6
Allianca.....	P. R. R. Wednesday.....	Mar. 12
Colon.....	P. R. R. Tuesday.....	Mar. 18
Advance.....	P. R. R. Tuesday.....	Mar. 25
Panama.....	P. R. R. Monday.....	Mar. 31
Allianca.....	P. R. R. Saturday.....	Apr. 5
Colon.....	P. R. R. Saturday.....	Apr. 12
Advance.....	P. R. R. Saturday.....	Apr. 19
Panama.....	P. R. R. Friday.....	Apr. 26
Allianca.....	P. R. R. Thursday.....	May 1
Colon.....	P. R. R. Wednesday.....	May 7

CRISTOBAL TO NEW YORK.

Allianca.....	P. R. R. Wednesday.....	Jan. 8
Colon.....	P. R. R. Wednesday.....	Jan. 15
Advance.....	P. R. R. Tuesday.....	Jan. 21
Panama.....	P. R. R. Tuesday.....	Jan. 28
Allianca.....	P. R. R. Sunday.....	Feb. 2
Colon.....	P. R. R. Sunday.....	Feb. 9
Advance.....	P. R. R. Saturday.....	Feb. 15
Panama.....	P. R. R. Saturday.....	Feb. 22
Allianca.....	P. R. R. Friday.....	Feb. 28
Colon.....	P. R. R. Saturday.....	Mar. 8
Advance.....	P. R. R. Wednesday.....	Mar. 12
Panama.....	P. R. R. Tuesday.....	Mar. 18
Allianca.....	P. R. R. Monday.....	Mar. 24
Colon.....	P. R. R. Sunday.....	Mar. 30
Advance.....	P. R. R. Monday.....	Apr. 7
Panama.....	P. R. R. Saturday.....	Apr. 12
Allianca.....	P. R. R. Friday.....	Apr. 18
Colon.....	P. R. R. Thursday.....	Apr. 24
Advance.....	P. R. R. Thursday.....	May 1
Panama.....	P. R. R. Wednesday.....	May 7
Allianca.....	P. R. R. Tuesday.....	May 13

NEW YORK TO COLON.

Metapan.....	U. F. C. Wednesday.....	Jan. 1
Tivives.....	U. F. C. Saturday.....	Jan. 4
Prinz Sigismund.....	H.-A. Saturday.....	Jan. 4
Zacapa.....	U. F. C. Wednesday.....	Jan. 8
Sixola.....	U. F. C. Saturday.....	Jan. 11
Prinz Joachim.....	H.-A. Saturday.....	Jan. 11
Almirante.....	U. F. C. Wednesday.....	Jan. 15

COLON TO NEW YORK.

Santa Marta.....	U. F. C. Thursday.....	Jan. 9
Prinz August Wilhelm.....	H.-A. Tuesday.....	Jan. 14
Metapan.....	U. F. C. Thursday.....	Jan. 16
Prinz Sigismund.....	H.-A. Monday.....	Jan. 20
Tivives.....	U. F. C. Tuesday.....	Jan. 21
Zacapa.....	U. F. C. Thursday.....	Jan. 23
Prinz Joachim.....	H.-A. Tuesday.....	Jan. 28

NEW ORLEANS TO COLON.

Parismina.....	U. F. C. Saturday.....	Jan. 4
Saramacca.....	U. F. C. Wednesday.....	Jan. 8
Abangarez.....	U. F. C. Saturday.....	Jan. 11
Cartago.....	U. F. C. Wednesday.....	Jan. 15
Atenas.....	U. F. C. Saturday.....	Jan. 18
Heredia.....	U. F. C. Wednesday.....	Jan. 22

COLON TO NEW ORLEANS.

Atenas.....	U. F. C. Thursday.....	Jan. 9
Heredia.....	U. F. C. Thursday.....	Jan. 9
Parismina.....	U. F. C. Thursday.....	Jan. 16
Saramacca.....	U. F. C. Thursday.....	Jan. 16
Abangarez.....	U. F. C. Thursday.....	Jan. 23
Cartago.....	U. F. C. Thursday.....	Jan. 23

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers for New York, via Kingston and Santiago de Cuba, sail thus: the *Prinz Joachim* and the *Prinz August Wilhelm* on alternate Tuesdays at 10 a. m., and the *Prinz Sigismund* and the *Prinz Eitel Friedrich* on alternate Mondays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m.

CANAL



RECORD

Volume VI

ANCON, CANAL ZONE, WEDNESDAY, JANUARY 15, 1913.

No. 21.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications,
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

North Guide Wall at Gatun Locks.

Excavation for the Atlantic approach to Gatun Locks has disclosed, at about 150 feet beyond the lower end of the locks proper, a sharp dip in the rock on which the center guide wall is to rest. The rock beneath most of the site lies under alluvial earth and mud, from 40 to 117 feet below sealevel. After excavation is carried about 40 feet below sealevel, piles are driven to rock. Where the plane dips, the rock lies about 90 feet below sealevel.

It has been decided to build the wall 200 feet shorter than was proposed in the original plans. At this it will be 1,015 feet long, six feet longer than the corresponding wall at the upper end of the locks. It will be longer than any ship that the 1,000-foot lock chambers can receive, or than any group of ships that might be passed through the locks simultaneously. Ships other than those which can be accommodated immediately will wait in the anchorage basin in Limon Bay, and approach on signal when the locks are ready for their passage. Curtailing the construction will save 9,000 yards of concrete, the driving of about 30,000 feet of piling, 800 linear feet of timber buffers, and an indeterminate amount of expensive excavation.

Breakwater at Atlantic Entrance.

The trestles for the breakwater at the Atlantic entrance to the Canal have been completed to their full length of 11,700 feet from the shore; and the core of the jetty, composed of rock quarried at Toro Point, is also completed. This core is composed of 819,930 cubic yards of rock, and in addition there have been placed upon the breakwater proper about 547,842 cubic yards of material dredged from the Canal. The armoring of the mole with hard rock from Porto Bello advances steadily, and at the close of December, 134,390 cubic yards of this rock had been dumped. The total amount of material of all kinds dumped within the area of the breakwater proper

is 1,502,362 cubic yards and there remain to be placed over 600,000 cubic yards.

During the past two weeks heavy seas have been running in Limon Bay but these are an advantage rather than otherwise at this stage of the work, because they help in reducing the seaward face of the jetty to its proper slope. As planned, the sea face of the mound is on a slope of 1 on 2 from the top (about 10 feet above mean tide) to a point 15 feet below mean sealevel. There it assumes the steeper slope of 1 on $1\frac{1}{2}$. The rock is dumped upon the jetty from the top and from the inshore side, and when the sea is calm it has a tendency to pile up on a steeper slope than that planned. The beating of the waves upon this piled up mass gradually reduces it to its proper slope.

Slide in West Bank of Culebra Cut.

Early in the morning of January 11 a portion of the west bank of the Cut, opposite Mount Zion Hill, Culebra, moved about thirty feet laterally towards the center of the cut, destroying the tracks on the two upper benches, west side, and preventing access during the day to steamshovel No. 219 working on the 95-foot berm on the west bank of the Canal. The total amount of material in motion was between two hundred and fifty and three hundred thousand cubic yards, but a considerable portion of the displaced material lies entirely west of the prism and will probably not have to be removed.

Steamshovel No. 204 was cut in at the toe of the slide on January 13 and the incline track from the 96-foot level, which had been out of commission during the entire day of the 11th, was again in working order on the morning of January 13.

Road from Diablo to Ancon.

A macadam road is being built from a point just east of the crossing of Corozal-Diablo road and Panama railroad to a point in Ancon, near the Hotel Tivoli. The road is to parallel most of the way the main line of the Panama railroad, and will utilize for a distance of 2,400 feet the bed of the old line of the railroad, from Diablo to the place at which it is intersected by the relocated line. Beyond that point it will continue along the east side of the railway, with a clearance of no less than 30 feet, on a fill to be made by dumping spoil from Culebra Cut. This fill will extend to a point about 300 feet south of the tower at Balboa Junction. There the road will cross the single track leading to Panama, and will pass over the fill within the triangle enclosed by the main line, the Balboa wye, and the branch line to Balboa of the Panama railroad. Crossing the Balboa branch near the building to which the lock models were recently transferred, the highway will join the street leading to the Tivoli Hotel. The road is to be 16 feet wide 9,600 feet long, and will lie entirely within the

Canal Zone. The distance to the summit of Caledonia Bridge from Corozal station by the present route is 22,000 feet.

The actual road construction is to be performed by labor of Ancon district prisoners. A laborers' barracks, normally accommodating 84 men, is being reconstructed on the plot of ground in rear of the Corozal police station, as a stockade for quartering the road-workers.

Decrease in Cost of Repairs to Unloaders.

The cost of repairs to unloaders used by the Central Division to unload spoil from flat cars has steadily diminished during the past three years. This has been due to careful supervision while the machines were under repair in the shops, as well as requiring unloader engineers to make all field repairs, and to the system of instruction and supervision of unloader engineers as to the proper method of handling the machines. A statement of the comparative cost follows:

MONTH.	1910		1911	
	M'hines in service.	Cost of Repairs.	M'hines in service.	Cost of Repairs.
January	11	\$7,499.80	10	\$4,584.83
February	11	6,982.58	10	3,811.74
March	11	4,838.00	10	4,778.01
April	11	4,592.43	10	3,888.49
May	11	6,190.54	10	3,029.06
June	11	3,904.11	10	5,920.19
July	10	4,918.98	10	3,803.57
August	10	3,824.95	10	6,159.48
September	10	3,895.22	10	4,042.78
October	10	4,520.11	10	3,872.07
November	10	951.14	10	3,618.62
December	10	6,441.73	11	3,036.76
Total	126	58,559.69	121	50,545.60

MONTH.	1912	
	M'hines in service.	Cost of Repairs.
January	11	\$2,658.00
February	11	1,571.35
March	11	2,551.43
April	11	3,143.08
May	10	3,551.11
June	10	3,233.54
July	10	2,979.35
August	10	3,425.97
September	10	2,269.48
October	10	2,583.83
November	10	2,405.70
December	11	3,850.32
Total	125	\$34,223.16

Dock No. 16 at Cristobal in Use.

Dock No. 16 at Cristobal was used for the first time on January 12, when the Peninsula and Occidental steamship *Evangeline* discharged its passengers on the quay along the east side. On January 13 the Hamburg-American steamship *Moltke* with a tourist party aboard berthed there, and at the same time six torpedo boat destroyers were also in the dock.

Brazos Brook-Gatun Lake Tunnel.

The 6 by 6 foot tunnel, through which is to be laid a 20-inch cast iron main for passing water from the Gatun Lake, as an auxiliary supply to the Brazos Brook reservoir, has to

NOTES OF PROGRESS.

(Continued.)

date been driven about half of its length of 400 feet. Driving is in progress from both ends along axes slightly inclined to insure drainage outwards. Each mining gang consists of about 8 West Indian laborers, working under an American foreman of mining experience. The drilling is done by hand, as the site of the tunnel is beyond connection with air or electric lines. The saddle beneath which the tunnel is being driven rises to an eleva-

tion of approximately 190 feet above sea-level, or 115 feet above the axis of the tunnel. This saddle is about $2\frac{1}{2}$ miles from the dam forming the reservoir.

All the material used in the construction must be hauled in wagons from the railroad at Mount Hope to the reservoir dam, a distance of $1\frac{1}{4}$ miles, and then is transported up the reservoir on a pontoon barge, towed by row boats. The water transportation extends about $2\frac{1}{2}$ miles above the dam, following a tortuous course among the hills.

From the wharf on which the materials

are unloaded from the barge, a Decauville track of a half meter gauge has been laid along the trail, a distance of 1,000 feet to the portal of the tunnel. This road will provide means for transporting sand, stone, cement, pipe, valves, etc., for the construction of the controlling works and gate-house.

The progress of the tunnel confirms the indication of the diamond drill survey as to the nature of the material through which it is being driven. The blue, argillaceous sandstone, dense and scarcely pervious, forms the body of the ridge above and below the axis of the tunnel. The walls and roof of the tunnel stand firm, and the driving has proceeded without hindrance or accident.

CONCRETE WORK IN THE LOCKS.

Over 95 per cent of the total of 4,446,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on January 11, the amount in place being 4,225,243 cubic yards.

GATUN LOCKS.

Over 94 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on January 11 being 1,921,988 cubic yards, out of a total of 2,043,730. A statement of the amount placed in the locks each working day of the week ending January 11, and of the total, follows; and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.				
January 6.....	818	13.61	2					818
January 7.....	1,040	17.31	2					1,040
January 8.....	746	12.44	2					746
January 9.....	648	10.80	2					648
January 10.....	1,278	21.30	4					1,278
January 11.....	1,184	19.72	4					1,184
Total.....	5,714	95.24	2					5,714
Previously reported.....								1,916,274
Grand total.....								1,921,988

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is practically completed, 903,986 cubic yards having been placed at the close of work on January 11. The record for each of the working days of last week, follows:

DATE	AUXILIARY PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 1-cubic yard mixers.			Mixed by hand	Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.					
January 6.....				305	30.00	4			305
January 7.....				313	31.00	4			313
January 8.....				278	27.50	4			278
January 9.....				251	23.00	3			251
January 10.....				285	30.50	4			285
January 11.....				277	29.00	4			277
Total.....				1,709	171.00	3.83			1,709
Previously reported.....									4,493
Grand total.....									4,493

MIRAFLORES LOCKS.

Over 93 per cent of the concrete for the system of two twin locks at Miraflores was in place January 11, the total amount on that date being 1,399,269 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 1-cubic yard mixers.			AUXILIARY PLANT. 1-cubic yard mixers.			Mixed by hand.	Large stone.	SPILLWAY. 1-cubic yard mixers			Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			Concrete placed.	Hours worked.	No. of mixers	
	Cu. Yds.			Cu. Yds.			Cu. Yds.					Cu. Yds.			
January 6.....	1,712	18.42	8	123	8.00	1	125	20.00	2						19,60
January 7.....	1,788	44.17	8	131	7.00	1	160	22.00	4			102	5.50	1	2,181
January 8.....	2,030	45.00	8	76	5.00	1	154	22.00	3			143	6.00	1	2,403
January 9.....	1,842	41.50	8	134	8.00	1	146	19.00	2			183	7.50	1	2,305
January 10.....	1,730	40.00	8	67	4.00	1	181	20.00	2			180	7.50	1	2,128
January 11.....	1,608	39.00	8				130	18.00	2			113	5.50	1	1,860
Total.....	10,710	228.09	8	531	32.50	.83	875	121.00	2.5			721	32.00	.83	12,837
Previously reported.....												3,693			1,386,432
Grand total.....												3,693			1,399,269

Gatun Dam Spillway.

The concrete work in the Spillway at Gatun Dam is over 94 per cent completed, 213,238 cubic yards, out of a total of 225,000, having been placed at the close of work on January 11. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete laid.	Hours worked.	No. mixers used.
	Cu. Yds.		
January 6.....	144	7.00	2
January 7.....	79	4.75	1
January 8.....	165	8.50	2
January 9.....	49	3.00	2
January 10.....	140	8.00	1
January 11.....	114	5.50	1
Total.....	691	36.75	14
Previously reported.....	212,547		
Grand total.....	213,238		

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending January 11:

DATE.	Hours workd.	Cubic yards.
January 6.....	10.25	3,466
January 7.....	10.15	3,206
January 8.....	9.50	3,387
January 9.....	10.05	3,495
January 10.....	10.50	3,093
January 11.....	8.55	2,760
Total.....	60.20	19,407

Internal Revenues.

Collections other than postal collections, by the Division of Posts, Customs and Revenues during December were as follows: Bicycle and chauffeur licenses, \$38; motor vehicle licenses, \$243; steamboat inspection, \$85.15; retail liquor licenses, \$21,000; taxes, license, etc. (Deputy Collectors of Revenues), \$13,650.34.

TRAFFIC CONGESTION.

One hundred and Seventy-five Trains through Single Track Tunnel in Ten Hours.

The site of Miraflores Spillway, for which excavation is in progress, is crossed by the double track over which the dirt trains leaving Culebra Cut from its south end pass on their way to the dumps. It will be necessary to remove the tracks from the Spillway site by the first of March. The possibility of raising them on inclines and spanning the site with bridges was considered, but as this would involve constant danger and interference it has been decided to take them out entirely and send the dirt trains over the main line of the Panama railroad, through the tunnel at Miraflores. Between Pedro Miguel and Corozal Junction the railroad has a single track. In order to cause as little congestion as possible the Central Division will construct two incline tracks north of the tunnel and build a second main track along the east side of the Panama railroad from the south end of the tunnel to Corozal, so that only about 1,050 feet of single track will be used.

Notwithstanding this arrangement, the centering of so much traffic at the tunnel will create the most difficult problem of transportation yet encountered in the Canal excavation. About eighty dirt trains pass out of the south end of the Cut, and back, during the ten hours between seven in the morning and five in the afternoon of a working day. During that time the Panama railroad runs six passenger and about ten freight trains through the tunnel. Approximately 175 trains are to pass over the single track in ten hours, which is at the rate of one in less than four minutes. A train 940 feet long, traveling at 10 miles an hour, will take not less than 48 seconds to pass clear of the single track span of 1,050 feet, and successive trains in the same direction can not pass over, with safe headway, faster than one a minute. Handling the trains in both directions through the tunnel will require expeditious management, with more time consumed by the passage of each train than would be the case were the movement all in one direction.

To facilitate train movement, the inclines over which dirt trains will be drawn from the present tracks, which are about 18 feet lower than the main line, for the shunt through the tunnel, will be built with easy grades except the one on which the empty trains will leave the tunnel. This will drop away on a grade of three per cent. At the north end of the tunnel the loaded trains will approach the mouth over a long incline, graded at a little less than one-half of one per cent. This incline will leave the Pedro Miguel yard near the coal chute, 650 feet north of the Pedro Miguel River, which it will cross on a pile trestle 300 feet in length, and then east of Pedro Miguel yards, and connect with the Panama railroad at the culvert just north of Miraflores passenger station. Trains will run left-handed on the inclines north of the tunnel.

The Panama railroad will begin shortly the construction of an interlocking system to operate the switches at the ends of the tunnel. An operating house will be erected at each end of the tunnel, with a system of signal towers to insure as safe control of trains as possible. The estimated cost of the interlocking plant is \$4,000.

Should any dumping be required after the completion of the new tracks the loaded trains can be sent to the dump by way of

WEATHER CONDITIONS, CANAL ZONE, YEAR 1912.

While the rainfall on the Isthmus during the calendar year 1912 was everywhere deficient, except along the immediate Pacific Coast, it was generally heavier than the annual rainfall in 1911.

The 1912 precipitation exceeded the values for the previous year at all stations except Rio Grande, Camacho, Alhajuela, Monte Lirio, and Porto Bello. The annual totals ranged from 71.78 at Ancon, to 147.61 at Porto Bello. The average fall over the Pacific Section was 76.59 inches, and over the Central and Atlantic sections 89.68 inches and 125.36 inches respectively. The maximum 24-hour rainfall recorded during the year was 7.23 inches at Ancon on May 12, and 13th.

The average annual temperatures were well above normal at all stations. March was the warmest month at Ancon, and April at Culebra and Colon, while November was the coolest month at all stations.

The mean annual atmospheric pressure and the relative humidity were below normal while average conditions of cloudiness prevailed.

There was a notable excess in the wind movement over the Isthmus. The prevailing direction was from the northwest at Ancon and Culebra and from the north at Colon. March was the windiest month at all stations, and June the month of least wind movement.

The weather conditions that prevailed during the year again favored a high rate of evaporation, and the annual totals were the highest of record.

The following table summarizes the weather conditions for the year.

STATIONS.	Pressure (reduced to mean of 24 hours.)	Mean.	Temperature				Mean relative humidity.	Precipitation			Wind				
			Maximum.	Date.	Minimum.	Date.		Total in inches.	Station average.	Number of rainy days.	Total movement (in fathoms.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Ancon.	29.835	80.7	97	Apr. 7	66	Feb. 1	87	71.78	71.25	153	70.04	N. W.	34	S.	June 15
Culebra.	29.846	79.6	96	May 5	65	Feb. 2	88	78.99	89.66	172	68.40	N. W.	36	N. E.	July 30
Colon.	29.861	80.7	91	May 5	71	Feb. 10	84	117.59	129.32	224	98.72	N.	38	S. W.	Oct. 23

WEATHER CONDITIONS, CANAL ZONE, DECEMBER, 1912.

While the rainfall in the Canal Zone during the month of December, 1912, was everywhere below normal, it was much heavier than the December rainfall in 1911. The monthly totals ranged from 1.53 inches at El Vigia to 11.52 inches at Porto Bello. The maximum fall recorded in one day was 4.04 inches at Miraflores on the 30th.

Monthly mean air temperatures were about normal at all stations, while there was a general deficiency in cloudiness, relative humidity, and atmospheric pressure.

The wind movement was below normal at Ancon, but slightly above normal at the interior and Atlantic Coast stations. No unusually high velocities were recorded during the month.

Average conditions of nighttime foginess prevailed at the interior stations. Of the fogs observed 63 per cent were dissipated by 6.30 a. m., 86 per cent by 7.30 a. m., and 98 per cent by 8.30 a. m.

The following table summarizes the weather conditions for the month:

STATIONS.	Pressure reduced to mean of 24 hours.	Temperature.					Mean relative humidity.	Precipitation.			Wind.				
		Mean.	Maximum.	Date.	Minimum.	Date.		Total inches.	Station average.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Colon.	29.845	80.4	87	Dec. 2	67	Dec. 17	84	11.47	12.31	21	8,992	N. E.	23	N. E.	Dec. 13
Culebra.	29.828	78.8	88	Dec. 1	67	Dec. 18	91	4.87	7.68	15	5,567	N. W.	24	N.	Dec. 9
Ancon.	29.818	80.5	93	Dec. 5	69	Dec. 18	89	3.27	4.18	13	5,007	N. W.	20	N. W.	Dec. 16

an incline already built, east of the Panama railroad. It is believed, however, that the dumps at Miraflores will be completed by the first of March.

The work of laying out the lines of the inclines from the Pedro Miguel side of the tunnel began on January 3, and the construction of the new tracks will be pushed to completion. A total of about three miles of new track is to be built, and the filling required will amount to approximately 38,000 cubic yards.

The total cost of these track changes will exceed \$40,000.

It was first planned to build a double track incline south of the tunnel to connect with Central Division tracks about 2,000 feet north of Cardenas River. After the situation was carefully looked over by Central Division and Panama railroad officials it was decided to build a second main line along the east side of the P. R. R. main line from a point 250

feet south of the tunnel to Corozal junction. This will require only 1,000 feet more of track than the double track incline. The grade is easier, the expensive interlocking plant at Corozal junction will then not be necessary, and the track can remain for future use of the Panama railroad; whereas the incline tracks would have to be removed as soon as Culebra Cut is completed. Work will start at once; so as to have it completed if possible by March 1.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending January 25, 1913. (75th meridian time):

DATE.	High		Low	
	A.M.	P.M.	A.M.	P.M.
January 19.....	6.37	12.43	6.59	
January 20.....	1.05	7.36	1.48	8.00
January 21.....	2.05	8.32	2.45	8.57
January 22.....	3.00	9.23	3.37	9.48
January 23.....	3.52	10.12	4.34	10.37
January 24.....	4.40	11.00	5.10	11.24
January 25.....	5.25	11.45	5.55	

BUOYS FOR CANAL CHANNEL

Special Construction of Gas Buoys Necessitated by Local Conditions.

The sides of the Canal channel will be marked by gas buoys about every mile with intermediate spar buoys. Each gas buoy will consist of a cylindrical, floating, steel body surmounted by a steel frame which supports a light and lens at a height of 15 feet above water level. The body is eight feet in diameter, made of 5-16 inch steel plate with dished heads, to the bottom of which is attached a steel tube and counterweight. The draft of the buoy will be 12 feet, and it will be moored on its station by a heavy chain and a concrete sinker.

The corroding action of the salt water and sea air in the tropics is such that extra precautions must be taken to protect the buoys, and therefore the entire inside of the buoy is given first a coat of bitumastic solution, applied cold, and second, one coat of enamel applied hot. The exteriors of the buoys which will be moored in salt water will be given one coat of boiled linseed oil applied hot and two successive coats of the best quality of red lead, after which they will be treated with an antifouling compound.

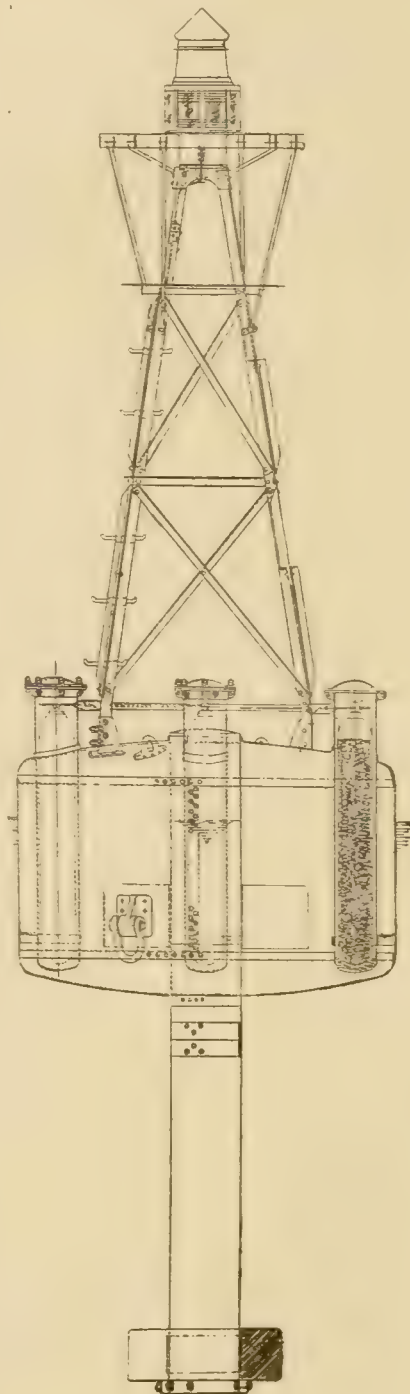
The entire bed of what will be Gatun Lake, when the water is allowed to rise to an elevation of 87 feet, is covered with a dense tropical growth which in the state of decomposition causes the water to scour all ordinary paints from any kind of metal. To overcome this chemical action the exterior of the buoys will first be painted with red lead and linseed oil after which they will be painted with anticorrosive paint.

The lens and lantern at the top of the steel superstructure contains the source of light which in all buoys is a small acetylene flame of about 40 candle power. The rays of light of this flame when projected through the lens produce a light of about 450 candle power. The acetylene gas for each buoy is stored under about 150 pounds pressure in four tanks—technically known as accumulators; each accumulator being inserted in a pocket in the body of the buoy, from which it may be withdrawn when empty and replaced by a fully charged accumulator without taking the buoy out of the water. The gas of the four accumulators is led through piping to a manifold, thence up one leg of the steel superstructure to a governor in the base of the lantern. This governor reduces the high pressure to a uniformly low pressure which is required at the burner.

Each accumulator is a steel cylinder nine inches in diameter and 69 inches long, tested to 75 atmospheres and completely filled with a porous mass possessing a porosity of 80 per cent. Half of the porous space is occupied by acetone which is a peculiarly excellent solvent for acetylene. Acetylene dissolves as freely in it as sugar does in water, and the solubility increases with the pressure applied. Acetone dissolves 25 times its own bulk of the gas at ordinary temperature and pressure, and for each additional atmosphere of pressure to which it is subjected a similar quantity will be dissolved. Compressing acetylene to more than two atmospheres at a temperature of 71 degrees F. makes it liable to explosion but when the gas is forced into acetone, a mixture is secured which is free from danger of explosion, and therefore available for safe transportation and handling.

All the gas buoys will have flashing and

occulting lights, similar to those described for the beacons for Culebra Cut in THE CANAL RECORD of January 1, 1913, and to obtain the flashes and occultations, the gas issuing from the governor at the base of the lantern passes into a small device known as the flasher through a valve which remains open during the whole dark interval. When a certain pre-



GAS BUOY.

Focal Plane above Water line 15 feet. Eight of the buoys will be placed in the Atlantic Entrance, 6 in the Pacific Entrance, 43 in Gatun Lake.

determined quantity of gas has passed into the flasher, so that a flexible leather diaphragm is at the top of its stroke, the inlet valve instantaneously closes, and simultaneously the outlet valve of the main burner opens allowing the accumulated gas to pass

to the main burner where it is ignited by a constantly burning pilot flame. The gas outlet remains open until the total gas quantity has been consumed in the main burner, whereupon the outlet closes and the inlet opens, remaining open until a similar quantity of gas accumulates in the flasher, when the cycle of operations is again repeated. Thus the light and dark intervals alternate automatically and produce a flashing or occulting light.

The gas supply in each of the buoys will last from three to seven months depending upon the characteristic of the light, and will burn continuously day and night during that time. The acetylene gas will be made at the oxy-acetylene gas house at the Balboa Shops where it will be compressed and forced into the portable accumulators.

Postoffice Business.

Money orders were issued at Canal Zone postoffices in December to the amount of \$423,851.53, the number being 22,972. The stamp sales amounted to \$10,611 of which \$6,306.60 went to Panama.

Annual Rainfall for Three Years.

STATIONS.	1910	1911	1912	Station Av.	Years of record	Rainy days 1912
<i>Pacific Section—</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>		
Ancon	75.78	64.10	71.78	71.25	15	153
Balboa	75.30	63.73	71.89	70.62	14	148
Miraflores	102.57	61.97	88.49	91.22	4	164
Pedro Miguel	96.36	64.12	75.71	84.84	5	163
Rio Grande	104.15	82.11	75.14	88.84	8	176
<i>Central Section—</i>						
Culebra	103.37	74.84	78.99	89.66	22	172
Camacho	117.48	84.72	77.98	94.09	6	184
Empire	90.66	66.70	74.56	81.14	8	178
Gamboa	115.99	70.67	89.07	92.85	30	201
Juan Mina		82.46	88.24	91.31	2	192
Alhajuela	131.01	90.05	83.73	104.26	13	186
El Viga	126.01	82.64	94.65	111.50	4	193
Gorgona	111.34	76.51	91.05	97.98	1	178
Erivales			104.66		1	242
Trinidad	154.05	91.53	103.04	120.90	9	260
Monte Lirio	179.73	113.27	100.74	134.09	5	242
<i>Atlantic Section—</i>						
Gatun	156.21	99.28	111.83	131.48	8	242
Brazos Brook	155.19	116.08	124.66	138.49	6	282
Colon	149.94	112.75	117.59	129.32	43	224
Porto Bello	170.12	148.94	147.61	168.50	5	259

Rainfall from January 1 to 11, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon	.23	6	.24
Balboa	.27	6	.35
Miraflores	.32	11	.86
Pedro Miguel	.10	1	.16
Rio Grande	.69	8	.73
<i>Central Section—</i>			
Culebra	.56	8	.57
Camacho	.45	8	.49
Empire	.86	8	.89
Gamboa	.73	8	.77
Juan Mina	.04	1	.07
Alhajuela	.08	1	.10
El Viga	.09	1	.09
Gorgona	.49	8	.68
Erivales	.62	8	.85
Monte Lirio	.20	13-5	.70
<i>Atlantic Section—</i>			
Gatun	.44	5	1.17
Brazos Brook	1.60	3	3.13
Colon	2.32	1	2.64
Porto Bello	.39	5	1.35

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. To 5 p. m., January 10.

Band Concert.

A concert will be given by the Isthmian Canal Commission band at Empire, on Sunday, January 19, 1913, at 6 p. m.

The next concert will be given at the Hotel Tivoli, Ancon, on January 26, at 8 p. m.

MUNICIPAL WORK IN PANAMA.

Maintenance of Streets and Sewers.

Maintenance of the street, sewer, and water systems in the city of Panama is carried on under the direction of an official of the Commission, the Superintendent of Public Works. In the routine work the fire hydrants are tested and flushed each month and necessary repairs made to them, and all valves on the water mains are tested at least once each month. All of the individual water connections in the city are metered, the water meters remaining the property of the Isthmian Canal Commission; there are 2,035 connections in use at the present time. These meters are read and bills rendered quarterly for water consumed. The usual work in connection with the sewer system consists of flushing the sewers and cleaning all of the manholes and catch basins at least once each month. Maintenance work on the streets consists of regular inspections, with such minor repairs to the pavements and to the concrete curb and gutter as may be needed. But in addition to this ordinary maintenance work, it is necessary to make more or less extensive repairs to the sewer system and to the pavements from time to time.

The most extensive piece of work in connection with the maintenance and repair of the sewer system during the past two years has been the construction of a wall for the support of the sewer outfall along the beach in the vicinity of West 17th and West 19th streets. The sand foundation, on which the sewer outfall was originally constructed, had been washed away to such an extent by the action of the tide that the outfall was broken in several places and it was impossible to repair it and maintain the proper grade on that foundation. Concrete supports were therefore constructed, resting on rock foundation, and the sewer pipe was laid in concrete, making an absolutely firm foundation for the outfall. Repairs were made to the outfall in September and October, 1911, for a distance of 234 feet and it has now become necessary to make similar repairs for a further distance of about 130 feet; work on this is now in progress.

Another piece of maintenance on the sewer system was the installation of nine large catch basins in various parts of Guachapali and Santa Cruz, and of three overflow connections between the sanitary sewer and the storm sewers. These installations were made so that the system would be better able to take care of the large amount of surface water on the streets during the heavy rains.

There are 117,353 linear feet or 22.2 miles of sanitary sewers, and 3,163 feet or 0.6 of a mile of storm sewers in the city.

Practically all of the streets of the city are paved with brick, concrete, or macadam, the relative proportions being as follows:

	Length.		Area.
	Feet.	Miles.	Sq. Yds.
Brick streets.....	24,870	4.71	64,227
Concrete streets.....	11,900	2.25	24,546
Macadam streets.....	28,508	5.40	61,879
Total.....	65,278	12.36	150,652

A part of the maintenance of the streets has been the removal of the basket gutters from the street crossings in various parts of the town. These gutters, which were a great hindrance to traffic and which were not necessary for drainage purposes, were filled and the pavement brought to the grade of the rest

of the street and the street intersections left with a level surface. Sixty-one gutters were removed in various parts of the city, most of them being in the brick paved streets.

In May, 1912, practically all of the lower part of West 20th street was washed out during a heavy rainfall, and extensive repairs had to be made. A retaining wall was built at the foot of the street, near the beach, and the street was then filled to the proper grade and macadamized; the concrete curb and gutter that had been washed out was also replaced.

Crude oil was first used as a binder on macadam streets in the city of Panama about a year ago and the results have been highly satisfactory. The oil was used on Avenue "B" extension in the vicinity of the Panama railroad freight house, and from there north. This is the oldest macadamized street in the city; and it has been in use for some time without repairs and was worn down so that there was very little screenings on the surface. The oil bound well with the macadam, completely laid the dust, and in addition afforded better surface drainage. California crude oil was used.

An improvement was made in the brick pavements about a year ago by putting a coating of hard tar on the steeper grades, where the bricks were worn and were very slippery. The tar was melted and poured on the brick and then covered with a thin layer of sand. All of the grades on Central Avenue were treated in this way and in many instances a second coating was applied.

The most recent maintenance work has been on the west end of B street and on Balboa Road. New concrete curb and gutter have been built on "B" street, and the Balboa Road has been entirely resurfaced. This work has just been completed.

During the past year a tramway system has been constructed in the city of Panama, but the pavement that has been removed in connection with this work has been replaced by the contractors. The total length of the tramway within the city is about 21,300 feet, not including double track and sidings, and all the track is now in place.

Visit of Second Division of Atlantic Fleet.

The Second Division of the Atlantic Fleet of the United States Navy, comprised of the battleships *Vermont*, *Michigan* and *South Carolina*, and the Fourth and Fifth Groups of destroyers, arrived in the harbor of Colon in the evening of January 12. The vessels are to lie there until January 17, and on each day a part of their crews is carried along the line of the Canal on a special train for the purpose of observing the work. This train leaves the special landing adjacent to the new Dock 16 at Cristobal, at nine o'clock in the morning. On January 13 accommodations were provided for 800 men, on each of three days thereafter, for about 1,200 men. The special train makes a stop of thirty minutes at Gatun, and stops at Gamboa, Culebra and other points of typical interest along the line. On the return trip to Colon the train leaves the station at Panama at 2.30 p. m. A baggage car is attached to the train for the use of those who desire to take their lunches with them, the morning and evening meals being eaten on board the ships. No special train is provided for the officers, who are passed, in uniform, on all passenger trains.

The facilities of the various departments of the Commission and the Panama railroad

have been placed at the disposal of the fleet. A special edition of 25,000 copies of the Official Handbook, compiled by the Secretary of the Commission, has been printed at the Mount Hope plant to be distributed among the sailors.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, January 11, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela.	Cambui.	Gatun Lake.
Sun., January 5.....	126.8	93.1	48.2	48.2
Mon., January 6.....	126.7	93.1	48.1	48.1
Tues., January 7.....	126.5	92.8	48.2	48.1
Wed., January 8.....	126.6	93.0	48.1	48.0
Thurs., January 9.....	126.4	92.8	48.1	48.1
Fri., January 10.....	126.4	92.7	48.2	48.2
Sat., January 11.....	126.4	92.6	48.3	48.3
Height of low water to nearest foot.....	125.0	91.0	44.0	

Proposals for Furnishing Plants and Seeds.

OFFICE OF DEPOT QUARTERMASTER.

MOUNT HOPE, C. Z., January 6, 1913.

Sealed proposals will be received at the office of the Depot Quartermaster, Mount Hope, until three o'clock p. m., February 1, 1913, when they will be opened in the presence of attending bidders, for furnishing, in cars at any station on the Panama railroad, 1,200 coconuts, 1,000 sugar cane plants and 5,000 white yam heads for planting; 1,000 banana plants, 1,000 plantain plants, one bushel seed sweet potatoes, two bushels Kafir corn seed, and two bushels sorghum cane seed. Best quality only is desired and samples must be submitted. Proposals should show unit prices. Coconuts are to be supplied at earliest practicable date and the other items to be delivered during April 1913. The right is reserved to reject any or all bids, or any combination of bids. Envelopes must be plainly marked; "Proposals for furnishing plants and seeds, to be opened February 1, 1913," and addressed to

C. NIXON,

Purchasing Agent on the Isthmus.

Sale of Gasoline Engine.

OFFICE OF DEPOT QUARTERMASTER.

MOUNT HOPE, C. Z., January 11, 1913.

Sealed bids will be received at the Office of the Depot Quartermaster, Mount Hope, until 3 p. m., January 30, 1913, when they will be opened in the presence of attending bidders, for the purchase of one 7½ horsepower "Buffalo" gasoline engine, recently removed from the police launch *Chagres*. This engine may be seen at this Depot on any working day between the hours of 7 to 11 a. m., and 1 to 5 p. m. The right is reserved to reject any or all bids. Bids must be plainly marked "Proposal for purchase of gasoline engine, to be opened January 30, 1913," and addressed to

C. NIXON, Depot Quartermaster.

Misdirected Letters.

ANCON, C. Z., January 16, 1913.

The following insufficiently addressed letters, originating in the United States or its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Boyle, Edw.	Johnson, Charles A.
Brady, Miss Escher	Judd, Jr., Frank
Broome, R. E.	Kesner, L. M.
Brown, Dr. J. R.	Knox, Ben. C.
Capwell, L. E.	Locker, Geo. R.
Carigan, Mrs. Joan Reddish	Loyd, Harry
Carroll, Robt.	Marshall, John
Cassell, John	Kausser, Gus
Clarke, Mrs. R. Hamilton	McCann, Bill
Coburn, Ralph	McDermott, Hugh
Coleman, Albert J.	Nikolas, E. C.
Cowan, Joseph	O'Boyle, M. P.
Cunningham, J. H.	Poole, Luther
Dobson, Gilbert C.	Reese, Wm. J.
Donnelly, P.	Rhodes, Harry
Frampton, Arthur	Richards, Miss Theresa
Gardner, Dean B.	Roper, Rev. L. R.
Grey, Edw.	Slatee, Mrs. A. A.
Hall, Mrs. Wells Hayden	Talor, Olive
Harwood, Mrs. Robt.	Walsh, Mrs. John J. (2cl.)
Hastings, Mrs. L. B.	Watson, Wm.
Heaton, August F.	Webb, Arthur D.
Henry Mrs. E. U.	Westberg, Mrs. J. E.
Holmeline, Miss Mamie	William, Maria

LOST—On January 10, between House 87, Bishop's Hollow, Ancon, and the railroad station, Panama, a purse containing seven 20-dollar gold pieces. A suitable reward will be paid if returned to the owner, at House No. 87, Ancon, Mrs. John Mergendollar.

FOUND—Ladies' silver watch. Owner can have same by identifying it at the Police Headquarters, Ancon, C. Z.

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

The arrangements for the annual meeting of the Canal Zone Federation of Women's Clubs to be held at the Tivoli Hotel on Saturday, January 25, are about completed. The clubs are expected to elect four delegates and four alternates, and to provide them with credentials which may be handed to the chairman of the Credentials Committee, Mrs. Charles S. Stoddard, of Gatun. The morning session will begin at 9 o'clock and the afternoon session will be at 2.30 o'clock. Members of the federated clubs, besides the delegates, alternates, and members at large, are expected to attend the business meeting. Invited guests, including club women who were members of the federated clubs in the years 1908 to 1910, are expected to attend the open session in the afternoon only. The Panama Railroad Company has cooperated with the Federation in the arrangements for this meeting by promising to place a car for club women and their guests on the 5.10 and 10.30 trains from Cristobal and on the 5.15 from Panama.

The Empire Woman's Club will hold a cake sale in the small game room of the Commission clubhouse on Saturday, January 18, beginning at 5 p. m.

St. Luke's Sunday School.

A Sunday school was organized at St. Luke's Hospital Chapel, Ancon, on Sunday morning, January 5, with 15 pupils and three teachers, and the chaplain, the Rev. Henry A. Brown, as superintendent. The lessons used are those issued by the Sunday school Commission of the Dioceses of New York, these being graded to various classes. The sessions of the school will be at 9 o'clock. St. Luke's Sunday school was organized at the beginning of the work of the Panama mission of the Episcopal Church in October, 1907. From that time until January, 1911, the school continued; it was disbanded owing to illness among the pupils, the majority of whom are the children of members of the hospital staff. There is a circulating library with the school, the books having been presented by two young members of the church and by the Church Periodicals Company.

Cristobal Union Church.

The annual meeting of the Cristobal Union Church organization was held in the chapel on Sunday morning, January 5, following the morning service. The following officers were elected for the ensuing year: Dr. Claude C. Pierce, president; Mr. Leander Larsen, vice president; and Mr. William Bennyhoff, secretary. The executive council is composed of J. M. Weaver, H. A. Clark, George Butters, and A. J. Billett. The membership of the Sunday school organization, including the outside departments, is 300. The social service department which was organized in 1912 continues its work; the Chinese class has about 20 members and the boys class is well attended. The Ladies Aid Society holds a meeting on the second Tuesday in each month.

Prisoner's Relief Fund.

The prison committee at Culebra has received the thanks of the convicts stationed at the Mandingo stockade for the cakes and other supplies sent them for their Christmas dinner. There was a religious service at the stockade on Christmas day, following

which dinner was served. The committee has in hand a sum of \$50 which will be used as occasion arises for the relief of discharged prisoners.

Pythian Sisters.

The recently elected officers of the Canal Zone Chapter, Pythian Sisters, will be installed at a called meeting which will be held in January. These officers, who will serve for one year are as follows: Mrs. Bessie Walraven, excellent chief; Mrs. Susan Reese, excellent senior; Mrs. Lettie Peterson, excellent junior; Mrs. Louise Lotz, manager of the temple; Mrs. Marion Stanner, mistress of records and correspondence; Mrs. Ellen Warren, mistress of finance; Mrs. Annie Peirson, protector of the temple; Mrs. Grace Smith, guardian of the temple. The past excellent chief is Mrs. Annie Wilson. Meetings of the auxiliary are held in the lodge hall, Las Cascadas, upon call of the presiding officers. The membership is about 50.

Church Concert.

The Woman's Altar Guild of Christ Church, Colon, will hold a concert on Monday evening, January 27, for the purpose of raising money for the purchase of a credence table to match the stone altar which has already been ordered for the church. Among those who will sing are Miss Marjoria Holme of London, the Cecelian Chorus of the Cristobal Woman's Club, and Dr. Frank Godfrey.

Visit of Bishop Stuntz.

Bishop Homer C. Stuntz, the newly elected head of the Methodist Episcopal Church for Central and South America is expected to pay his first visit to the mission in Panama in the early spring, arriving on April 28 and remaining until May 6. Bishop Stuntz is the bishop chosen at the quadrennial meeting of the General Conference of the Methodist Board held in Minneapolis in May, 1912.

Red Cross Finances.

A statement of finances of the Canal Zone chapter, American National Red Cross, for the month of November, 1912:

RECEIPTS.	
November 1, On hand.....	\$1,843 46
13, Received refund of amount paid for meals for man at Cristobal.....	11 70
22, Donation from Col. D. D. Gaillard.....	15.00
23, Sale of Christmas seals.....	100.00
23, Membership dues.....	2.00
	\$1,972 06
DISBURSEMENTS.	
November 11, Payment for S. S. tickets for Spanish woman deported from Colon.....	\$20.00
14, Meals furnished by Cristobal Hotel to persons without means.....	48.30
15, Relief for wife of Canal Zone prisoner.....	5.00
19, Printing receipt cards.....	2.38
22, Printing Christmas Seal posters.....	9.96
	85.64
November 30, Balance on hand.....	1,886.42
Approved: JOHN L. PHILLIPS, Treasurer. C. A. DEVOL, Chairman.	

Election in Gatun Christian League.

At a recent meeting of the Gatun Christian League, the following officers were unanimously reelected for the next six months: President, B. F. Sisson; vice-president, Wm. A. Wells; secretary, C. O. Jones; treasurer, Isaac Andrews.

International Brotherhood of Steam Shovel and Dredge Men.

Local No. 19, I. B. of S. S. and D. M., will hold its regular monthly meeting at Cristobal, Building No. 1, on Sunday, January 19, at 12.30 p. m. All members are requested to be present.

PERSONAL.

Mr. H. A. A. Smith and Mrs. Smith sailed for the United States on January 2, on the *Panama*.

Mr. R. Budd, who resigned as Chief Engineer of the Panama railroad on September 21, 1909, was appointed on January 1, 1913, Assistant to the President of the Great Northern Railway.

Col. H. A. Greene, accompanied by Mrs. Greene, returned to command at Camp Otis on January 12, after a leave of absence in the United States.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

LARGEST MEMBERSHIP WAS IN 1912.

The total membership of Y. M. C. A. Clubhouses reached the highest figure yet attained at the close of 1912 when there were enrolled 2,127 members. The previous record was for the month of January 1911 when there were 2,121 members.

ENTERTAINING THE SAILORS.

During the stay of the Second Division of the Atlantic Fleet, the Y. M. C. A. has undertaken to provide a lunch for the sailors who are being shown the Canal. This lunch is served on the train while the sailors are being taken from Colon to Panama approximately 1,000 per day for four days. A bureau of information has been established in the old Administration building in Panama and also at the Cristobal Y. M. C. A. for the benefit of the fleet, and the Gatun Y. M. C. A. has furnished a Committee to show the sailors the locks.

GENERAL.

The lecture on "Alcohol" which was to have been given by Dr. Orenstein in the various clubhouses this week has been indefinitely postponed on account of his illness.

The moving picture schedule for the week January 20 to 25, is as follows: Monday, Empire; Tuesday, Culebra; Wednesday, Corozal; Thursday, Cristobal; Friday, Gatun; Saturday, Gorgona.

Moving pictures will be shown at Porto Bello on Friday night, January 17.

CULEBRA.

Much interest is being manifested in the local duckpin tournament in which 26 men have entered.

High scores for the week are as follows: Perkins, 102; Kersey, 103, 115; Steele, 104, 101; Case, 119, 103, 109, 113, 106; Johnson, 113; Cain, 113, 106; Durand, 101; Dougherty, 123, 102; Brown, 105; Anderson, 106; Leonard, 105; Patterson, 100.

A "smoker" is being planned for the week of January 19.

EMPIRE.

A "smoker" program is being prepared and will be given sometime during the week of January 19.

Following the "First Aid" class on Mondays from seven to eight o'clock, there will be a gymnasium class beginning January 13.

GORGONA.

Members of the wrestling class are working hard to secure honors in the local championship meet to be held the latter part of the month. They are also looking forward to an Isthmian meet to decide the championship of the Zone.

The regular nights for wrestling are Mondays and Fridays and the regular nights for track team work are Wednesdays and Saturdays. Mr. Allen Wight has been appointed manager of the track team.

GATUN.

A wrestling class has been started, with Fred Hube and Eddie Andrews acting as coaches.

The Corozal duckpin team defeated the Gatun team on Saturday night, January 11.

The scores of a hundred or over in duckpins for the month were as follows: DePoorter, 100, 109; Carlson, 103; Humphreys, 108, 111, 100; Barte, 106, 109, 102, 104, 104, 104; Green, 101, 101, 103; Morrissey, 100, 100; Harper, 108; Claherty, 100; Ryan, 102; Dalton, 116. High scores in tennis were as follows: Eutermark, 220; Barte, 224, 212; Swallow, 205.

OFFICIAL CIRCULARS.

General Workmanship and General Conduct Report of Shop Employees on Termination of Service.

CULEBRA, C. Z., December 6, 1912.

CIRCULAR No. 309-B:

The general workmanship and the general conduct of shop employees on the gold roll upon termination of service will hereafter be marked as follows:

1. General workmanship will be described as excellent, very good, good, indifferent, or poor, and the qualifications for each rating are as follows:

(a) The rating of "excellent" will be given to those employees only who have demonstrated exceptional ability in both the quality and quantity of their workmanship in all classes of work assigned to them; furthermore, it will not be given to an employee on whose file a warning letter in regard to either the quality or quantity of his work, or both, or on whose file more than one letter in regard to work spoiled by him has been placed.

(b) The rating of "very good" will be given to those employees only who have demonstrated exceptional ability in either quality or quantity, or ability markedly above the average for the grade in both the quality and quantity, of their workmanship in all classes of work assigned to them; furthermore, it will not be given to an employee on whose file more than one warning letter in regard to either the quality or quantity of his work, or both, or on whose file more than two letters in regard to work spoiled by him have been placed.

(c) The rating of "good" will be given to those employees only who have demonstrated marked ability in either quality or quantity, but not both, or average ability for the grade in both quality and quantity of their workmanship in all classes of work assigned to them; furthermore, it will not be given to an employee on whose file an average of more than one warning letter for each year of service in regard to either quality or quantity of his work, or both, or more than one warning letter if his service was less than one year, has been placed, or on whose file more than two letters in any year's service have been placed in regard to work spoiled by him.

(d) The rating of "indifferent" will be given to those employees on whose files have been placed a sufficient number of warning letters in regard to either quality or quantity of work, or both, or letters in regard to work spoiled by them to make them ineligible for the rating of "good", and whose workmanship, on account of carelessness or lack of ability or experience, has been below the average in the grade in either quality or quantity, or both.

2. The rating of "poor" will be given to those employees on whose files have been placed a sufficient number of warning letters in regard to either quality or quantity of work, or both, or letters in regard to work spoiled by them to make them ineligible for the rating of "good" and whose workmanship, on account of gross carelessness or incompetency, has been markedly below the standard in either quality or quantity, or both.

3. Employees in each grade of each designation will be rated in general workmanship independently of other grades and in accordance with the foregoing rules, but the termination of service papers shall show the grade and the class of work performed when the designation covers a trade for which an apprenticeship is required and the rate of pay for the grade is fifty cents or less per hour.

4. The rating in workmanship will be determined by the quality of work performed in the grade in which the employee is serving at the time his services are terminated and by his record during his entire service; provided that, upon request, foremen and craftsmen special, or "leadingmen" will also be rated as grade 1 craftsmen.

5. General conduct will be described as excellent, good, or poor, and the qualifications for each rating are as follows:

(a) The rating of "excellent" will be given to those employees only who have received no warning letters and have not been orally warned in regard to their conduct at any place on the Isthmus, or who have not been absent without prior permission, and whose conduct on duty has been an example to other employees. The receipt of more than two cautionary letters in any one year of service in regard to failure to check in or out will constitute ineligibility for this rating.

(b) The rating of "good" will be given to those employees who have received not more than one letter in regard to conduct or absence without prior permission in any service year, have received not more than four cautionary letters in any one service year in regard to failure to check in or out, and whose conduct otherwise has been equal to the average in the shop.

(c) The rating of "poor" will be given to those employees whose records make them ineligible for the rating of "good," who have been intemperate or insubordinate, or whose general character has made them undesirable employees.

6. The fact that an employee has no warning or

cautionary letter on his file does not entitle him *per se* to the rating of "excellent" or even "very good," since he may have been derelict in several ways and on different occasions, no one of which warranted the placing of a warning letter on his file. These rules are intended to secure uniformity in ratings and insure that the ratings correctly represent the employee's average general conduct throughout his employment and his average general workmanship in the grade in which he is rated.

7. Upon the termination of the services of a shop employee the foreman under whom the employee last worked will recommend the rating in general workmanship and general conduct to which he considers the employee is entitled, and will forward his recommendations through the general foreman to the master mechanic or superintendent and the latter will determine the rating after consideration of the employee's record.

8. When a shop employee whose services have been obtained temporarily under Circular No. 357 is returned to the Division in which he is regularly employed, the latter division will be furnished promptly with a statement showing the ratings in general workmanship and general conduct to which the quality and quantity of work and the conduct of the employee entitled him during his temporary service.

When a shop employee is transferred permanently from one division to another, the former will furnish the latter with the ratings of the employee in general workmanship and general conduct during his employment in the division.

In either of these cases, if the employee is given a rating below "good" in either general workmanship or general conduct he shall be so informed.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Approved Ratings and Rates of Pay for Silver Employees.

CULEBRA, C. Z., December 15, 1912.

CIRCULAR No. 229-z. (Superseding Circular No. 229-g.)

Attention is invited to the following extracts from Circular No. 229-Revised, "Approved Ratings and Rates of Pay—Silver Roll;" amended in accordance with present rules:

"Upon first appointment, or upon reappointment after a break in service, unless specially authorized to the contrary, employees shall be entered upon the rolls at the lowest rate of pay authorized for the class of work which they are to perform, provided that an employee may be regularly transferred from one department or division to another without reduction; and provided further that an employee absent for not more than thirty days, with the prior consent of competent authority in his department or division, may be reinstated at his former rate of pay.

The thirty-day limit does not apply to European contract laborers in possession of checks of the series Nos. 1-13999, who should be reemployed at the contract rate (20 cents an hour) provided they show certificates of discharge from hospital of recent date, or certificate stating discharge due to reduction of force, or regular assignment, transfer or release by check number from the office of the Chief Quartermaster, or from another department or division.

Preferred laborers and artisans in possession of checks of the series No. 14001-19999, should be reemployed at the 16-cent rate unless they show certificate of discharge from hospital or a discharge or release from last employing division in good standing at a higher rate, of date within thirty days. After three full calendar months service, those reemployed at 16 cents should revert automatically to the 20-cent rate.

Other employees shall not be promoted from a lower to a higher rate of pay until they have completed at least three month's service at the lower rate. Promotions shall always be to the next higher grade."

In order to provide a uniform method for the regular transfer of a silver employee from one department or division to another without reduction of pay, "Silver Employee's Service Slip," Form 262-C, E., is hereby discontinued and new Silver Employee's Service Slip (Revised) Form C. E. 262-1 will hereafter be used in its place. Requisition should be made on the Depot Quartermaster for a supply to be put into use at once.

This service slip should be used in the case of all employees on the silver rolls who receive a rate of pay in excess of 10 cents an hour, and should not be used for any employee receiving 10 cents an hour or less.

Timekeepers in charge of silver rolls will see that three or more of these slips (depending on the number of men in the gang) are attached to the inside of the back cover of each odd and even day time book carrying any silver employees rated higher than 10 cents an hour.

When an employee is transferred to any other gang,

division, or department, or is discharge for any reason whatsoever, or voluntarily quits the service he must be furnished with one of these service slips, properly filled out and signed by the foreman, and the foreman must have the employee sign his name on the back of this form as a means of future identification. In the event the employee cannot write, his name will be signed and witnessed by the foreman, the employee making "his mark" in the usual way. This slip must then be presented to the time office for countersignature by the timekeeper. When the man reports at his next place of employment the slip must be presented to and taken up by the employing foreman, who will require the employee to sign his name as above, noting whether it agrees with signature placed thereon when he left his former employment, and attach it to the time book in which his name is entered, as authority for rating him higher than the minimum rate. The timekeeper in charge of the roll must enter his name on the time roll at the lowest rate of pay for the class of work performed, unless one of these service slips is attached to cover such employee. The slip will be attached to and remain with the time roll so that it may be accessible at all times for verification by inspectors of the rate of pay.

This service slip must be given to each employee who quits voluntarily or is discharged for any cause, and the specific reason for such action must be shown on the form: Such as, reduction of force, insubordination, violation of rules, absence without permission, etc. The foreman must indicate by note in time book each case in which service certificate is given.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Half-Rate Mileage for Servants.

CULEBRA, C. Z., January 9, 1913.

CIRCULAR No. 420-E:

Servants accompanying employees or members of their families may travel in first-class coaches of the Panama railroad on I. C. C. half-rate mileage. Servants, when not accompanying employees or members of their families, will not be permitted to travel on I. C. C. half-rate mileage. Requests for mileage tickets (Form C. E. 319) need not include servants.

H. H. ROUSSEAU, Acting Chairman.

Classified Expenditure Account.

EMPIRE, C. Z., December 6, 1912.

CIRCULAR No. 38:

The following new account in classified expenditures of the Isthmian Canal Commission has been authorized under "Construction and Engineering—General." Account 365—CONSTRUCTION, ELECTRIC TRANSMISSION LINE.

To this account will be charged a proper proportion of the salaries and expenses of the supervising force of the divisions, and the salaries and expenses of all officers and employees while engaged directly on the work of constructing the electric transmission line across the Isthmus; also the cost of all material, supplies, and incidental expenses used in connection therewith.

H. A. A. SMITH,
Examiner of Accounts

Approved: GEO. W. GOETHALS,
Chairman and Chief Engineer.

Cost of Brass Castings.

CULEBRA, C. Z., January 6, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

On account of the increased cost of copper the Quartermaster's Department has increased its price from 12 to 18 cents per pound, effect the 1st instant. On account of this increase in the cost of copper the Mechanical Division will charge 24 cents per pound for brass castings, effective January 1, 1913.

H. H. ROUSSEAU, Acting Chairman.

Price of Scrap Brass and Copper.

CULEBRA, C. Z., January 10, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

Referring to circular letter addressed to Heads of Departments and Divisions under date of January 6, relative to increased cost of copper.

In addition to prices mentioned in the above quoted circular, the price of scrap brass and copper will be 12 cents per pound effective January 1, 1913.

H. H. ROUSSEAU,
Acting Chairman and Chief Engineer.

Married.

BRUNER-BAIN—On January 6, at Ancon, Miss Zetta L. Bain, of Paraiso, to Mr. Murrell M. Bruner of Balboa, the Rev. Harry Compton of the Methodist Episcopal Church officiating. Canal Zone residence, Paraiso.

MCCANN-BATES—On Saturday, January 11, at St. Luke's Hospital Chapel, Ancon, Mildred O. Bates of Wyoming, Iowa, to Mr. William Ray McCann of Chicago, Ill., the Rev. A. A. Nellis officiating. Canal Zone residence, Culebra.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning January 15, 1913:

FRESH MEATS.		Price.
Mutton—Stewing per pound.....		6
Shoulder, neck trimmed off (4 pounds and over), per pound.....		9
Entire forequarter (not trimmed, 10 pound and over), per pound.....		8
Leg (8 to 10 pounds), per pound.....		17
Cutlets, per pound.....		18
Short cut chops, per pound.....		20
Lamb—Stewing, per pound.....		6
Entire forequarter, neck trimmed off, per pound.....		9
Leg (5 to 8 pounds), per pound.....		20
Chops, per pound.....		24
Cutlets, per pound.....		24
Veal—Stewing, per pound.....		10
Shoulder, for roasting (not under 4 pounds), per pound.....		12½
Chops, shoulder, per pound.....		16
Chops, per pound.....		24
Loin for roasting, per pound.....		24
Cutlets, per pound.....		28
Pork—Loin chops or roast, per pound.....		12
Beef—Suet, per pound.....		2
Soup, per pound.....		5
Stew, per pound.....		8
Plate, per pound.....		9
Corned, No. 1, per pound.....		14
Corned, No. 2, per pound.....		12
Chuck roast (3 pounds and over), per pound.....		12
Pot roast, per pound.....		15
Rib roast, second cut (not under 3½ pounds), per pound.....		16
Rib roast, first cut (not under 3 pounds), per pound.....		18
Sirloin roast, per pound.....		19
Rump roast, per pound.....		19
Porterhouse roast, per pound.....		20
Steak, chuck, per pound.....		12½
Round, per pound.....		13
Rib, per pound.....		18
Sirloin, per pound.....		19
Rump, per pound.....		19
Porterhouse (not less than 1½ pounds), per pound.....		20
Tenderloin (Western), per pound.....		30
Vension (Imported), Stew, per pound.....		6
Forequarter (not under 6½ pounds), per pound.....		9
Rack (not under 5½ pounds), per pound.....		20
Saddle (not under 7½ lbs.), per pound.....		20
Leg (not under 9 pounds), per pound.....		20
Chops, per pound.....		24
Cutlets, per pound.....		24
MISCELLANEOUS.		
Livers—Beef, per pound.....		11
Calif, each.....		60
Half, each.....		30
Steak Hamburger, pkg.....		13
Sausage—Bologna, per pound.....		11
Frankfurter, per pound.....		13
Liebowurst, per pound.....		13
Devonshire Farm, per pound.....		19
Sweetbreads—Beef, per pound.....		30
Eggs, fresh, one-half dozen only.....		20
Bluefish, per pound.....		15
Halibut, fresh, per pound.....		15
Salmon, fresh, per pound.....		22
Oysters, quarts, per keg.....		40
Shad, fresh, each.....		50
POULTRY AND GAME.		
Chickens—Fancy roasting, milk fed, large, each.....		1.40
Fancy roasting, milk fed, med., each.....		1.10
Fancy roasting, corn fed, about 5½ pounds each.....		1.25
Fancy roasting, corn fed, about 4½ pounds, each.....		1.00
Fowls, each.....		1.00
Ducks, (Western, about 4½ pounds,) each.....		1.25
Geese, each.....		1.90
Broilers, milk fed, each.....		70
Broilers, corn fed, each.....		60
Turkeys, per pound.....		26
Squabs, each.....		35
Capons, each.....		2.10
Ducks, blackhead, pair.....		60
teal, pair.....		50
Partridges, pair.....		1.30
Grouse, per pair.....		1.30
Pheasants, per pair.....		1.30
CURED AND PICKLED MEATS.		
Ham—Sugar cured, per pound.....		20
Sliced, per pound.....		22
Half, for boiling, per pound.....		21
Boiled, per pound.....		28
Hocks, per pound.....		28
Beef, salt tannin, per pound.....		12
Bacon—Breakfast, whole piece, per pound.....		25
sliced, per pound.....		26

	Price.
Ham, Lunch, per pound.....	32
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00
Pigs' feet, per pound.....	9
Tongues, per pound.....	18

DAIRY PRODUCTS.

Butter—Creamery, special, per pound.....	40
Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Parmesan, per pound.....	35
Edam, tin.....	26
Gouda, per pound.....	34
Snappy, cake.....	10
Milk (Certified), per bottle.....	**20
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	25
½ gallon.....	50

VEGETABLES AND FRUITS.

Beets, per pound.....	3
Celery, per head.....	6
Cabbage, per pound.....	3
Cucumbers, per pound.....	8
Carrots, per pound.....	3
Lettuce, per pound.....	*10
Onions, per pound.....	3
Parsley, per bunch.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	*2
Parsnips, per pound.....	3½
Squash, per pound.....	3
Turnips, per pound.....	3
Yams, per pound.....	3
Apples, per pound.....	4
Cranberries, per pound.....	10
Grapes, Spanish, per pound.....	12
Grape fruit, each.....	4
Lemons, dozen.....	24
Limes, per 100.....	80
Oranges, Jamaica, per dozen.....	12

*Indicates reductions from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advances on last list.

‡Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock supply next lightest weight is supplied and refund note sent for difference.

§Sold only from Commissaries; no orders taken for delivery.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, and Colon during the week ending January 11:

Schwarzald, January 4, from Antwerp, with 18 cases of valve parts, for Superintendent of Erection.
Prinz August Wilhelm, January 6, from New York with 300 cases soap polish, 58 bales rubber hose, 17 cases paper, 60 kegs rivets, for stock; 600 pieces coupler knuckles, for Mechanical Division, 66 cases castings, for Superintendent of Erection; 895 bundles steel bars, 2nd division Chief Engineer's Office; 20 bundles steel bars for Atlantic Division; 787 bundles steel bars, Panama Railroad Company.

Luchana, January 6, from Baltimore, with 200 cases turpentine, 120 cases dry paint, 150 kegs white zinc, 100 pieces steel plates, for stock; 182 crates furniture, Panama Railroad Company; 325 pieces car wheels, Mechanical Division; 674 bundles steel bars, 2nd division Chief Engineer's Office; 238 valve machine parts, 305 cases gate moving machines, 135 pieces structural steel, 30 packages chain fender material, 28 crates rack castings, 24 packages valves, for Superintendent of Erection.

Metapan, January 9, from New York, with 36 barrels lime, for Panama Railroad Company, 711 pieces iron pipe, for stock; 12 cases electrical material, for Mechanical Division; 150 cases electrical material, 13 cases castings, 71 packages pipe and fittings, for Superintendent of Erection.

Parismina, January 10, from New Orleans, with 151 pieces lumber (white oak), for Mechanical Division; 434 pieces cross ties, 148 pieces piling, 2,652 pieces lumber (yellow pine), 16 bundles shingles, 1,073 bales alfalfa hay, 19 rolls cotton duck, 357 drums lubricating oils, 400 cases greases, for stock.

Colon, January 10, from New York with 200 pieces bar iron, 210 bundles bar iron, 9 cases sheet metal, 20 cases oils, 25 pieces steel channels, 250 pieces steel bars, 500 kegs wire nails, 12 cases ledger paper, 50 drums lime, 83 crates handles, 50 bundles baskets, 36 rolls wire fencing, 200 drums welding compound, 300 drums dry paint, 600 kegs white lead, 91 cases bolts, for stock; 94 cases range parts 2,030 bundles steel bars, 30 crates chairs, 15 barrels tile, 522 crates tile slabs, 200 barrels plaster for Panama Railroad Company; 109 barrels clay, 63 bundles car couplers, 805 barrels sand, 109 bundles steel bars, 55 bundles steel springs, 104 cases electrical material, for Superintendent of Erection; and a miscellaneous cargo, the whole consisting of 6,751 packages, weighing 1,060 tons

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Advance.....	P. R. R. Thursday.....	Jan. 9
Panama.....	P. R. R. Wednesday.....	Jan. 15
Allianca.....	P. R. R. Tuesday.....	Jan. 21
Colon.....	P. R. R. Tuesday.....	Jan. 28
Advance.....	P. R. R. Monday.....	Feb. 3
Panama.....	P. R. R. Monday.....	Feb. 10
Allianca.....	P. R. R. Saturday.....	Feb. 15
Colon.....	P. R. R. Friday.....	Feb. 21
Advance.....	P. R. R. Friday.....	Feb. 28
Panama.....	P. R. R. Friday.....	Mar. 6
Allianca.....	P. R. R. Wednesday.....	Mar. 12
Colon.....	P. R. R. Tuesday.....	Mar. 18
Advance.....	P. R. R. Tuesday.....	Mar. 25
Panama.....	P. R. R. Monday.....	Mar. 31
Allianca.....	P. R. R. Saturday.....	Apr. 5
Colon.....	P. R. R. Saturday.....	Apr. 12
Advance.....	P. R. R. Saturday.....	Apr. 19

CRISTOBAL TO NEW YORK.

Colon.....	P. R. R. Wednesday.....	Jan. 15
Advance.....	P. R. R. Tuesday.....	Jan. 21
Panama.....	P. R. R. Tuesday.....	Jan. 28
Allianca.....	P. R. R. Sunday.....	Feb. 2
Colon.....	P. R. R. Sunday.....	Feb. 9
Advance.....	P. R. R. Saturday.....	Feb. 15
Panama.....	P. R. R. Saturday.....	Feb. 22
Allianca.....	P. R. R. Friday.....	Feb. 28
Colon.....	P. R. R. Saturday.....	Mar. 8
Advance.....	P. R. R. Wednesday.....	Mar. 12
Panama.....	P. R. R. Tuesday.....	Mar. 18
Allianca.....	P. R. R. Monday.....	Mar. 24
Colon.....	P. R. R. Sunday.....	Mar. 30
Advance.....	P. R. R. Monday.....	Apr. 7
Panama.....	P. R. R. Saturday.....	Apr. 12
Allianca.....	P. R. R. Friday.....	Apr. 18
Colon.....	P. R. R. Thursday.....	Apr. 24

NEW YORK TO COLON.

Zacapa.....	U. F. C. Wednesday.....	Jan. 8
Sixaola.....	U. F. C. Saturday.....	Jan. 11
Prinz Joachim.....	H.-A. Saturday.....	Jan. 11
Almirante.....	U. F. C. Wednesday.....	Jan. 15
Carrillo.....	U. F. C. Saturday.....	Jan. 18
Prinz Eitel Friedrich.....	H.-A. Saturday.....	Jan. 18
Santa Marta.....	U. F. C. Wednesday.....	Jan. 22
Pastores.....	U. F. C. Saturday.....	Jan. 25
Prinz August Wilhelm.....	H.-A. Saturday.....	Jan. 25
Metapan.....	U. F. C. Wednesday.....	Jan. 29

COLON TO NEW YORK.

Metapan.....	U. F. C. Thursday.....	Jan. 16
Prinz Sigismund.....	H.-A. Monday.....	Jan. 20
Tivives.....	U. F. C. Tuesday.....	Jan. 21
Zacapa.....	U. F. C. Thursday.....	Jan. 23
Prinz Joachim.....	H.-A. Tuesday.....	Jan. 28
Carrillo.....	U. F. C. Tuesday.....	Jan. 28
Almirante.....	U. F. C. Thursday.....	Jan. 30
Prinz Eitel Friedrich.....	H.-A. Monday.....	Feb. 3
Carrillo.....	U. F. C. Tuesday.....	Feb. 4
Santa Marta.....	U. F. C. Thursday.....	Feb. 6
Prinz August Wilhelm.....	H.-A. Tuesday.....	Feb. 11
Pastores.....	U. F. C. Tuesday.....	Feb. 11

NEW ORLEANS TO COLON.

Abangarez.....	U. F. C. Saturday.....	Jan. 11
Cartago.....	U. F. C. Wednesday.....	Jan. 15
Atenas.....	U. F. C. Saturday.....	Jan. 18
Heredia.....	U. F. C. Wednesday.....	Jan. 22
Turrialba.....	U. F. C. Saturday.....	Jan. 25
Prismina.....	U. F. C. Wednesday.....	Jan. 29
Abangarez.....	U. F. C. Saturday.....	Feb. 1

COLON TO NEW ORLEANS.

Parismina.....	U. F. C. Thursday.....	Jan. 16
Saramacca.....	U. F. C. Thursday.....	Jan. 16
Abangarez.....	U. F. C. Thursday.....	Jan. 23
Cartago.....	U. F. C. Thursday.....	Jan. 23
Atenas.....	U. F. C. Thursday.....	Jan. 30
Heredia.....	U. F. C. Thursday.....	Jan. 30
Turrialba.....	U. F. C. Thursday.....	Feb. 6
Parismina.....	U. F. C. Thursday.....	Feb. 6

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers for New York, via Kingston and Santiago de Cuba, sail thus: the *Prinz Joachim* and the *Prinz August Wilhelm* on alternate Tuesdays at 10 a. m., and the *Prinz Sigismund* and the *Prinz Eitel Friedrich* on alternate Mondays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m.



The Canal Record

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No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Acting Chairman's Report.

The report of the Acting Chairman of the Isthmian Canal Commission for the month of December is published in full in this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and Divisions.

Slides in Culebra Cut.

On the afternoon of January 16, the Cucuracha slide, located on the east bank of the Canal, again renewed its activity and by the morning of the 17th, the moving mass of material had completely covered all tracks in the Canal, except one next the west bank, making five tracks in all covered and destroyed by the slide.

A train of cars, standing at the two shovels which were excavating the toe of the slide, was caught by the rapidly moving material and two cars were derailed and buried. A new track was built around the toe of the slide and steamshovels No. 206 and No. 256 commenced digging the slide away before noon of the 17th.

This recent movement of the slide carried material to a greater distance across the canal than in any other case, except the original movement of the same slide in 1907. It is estimated that in all not less than three or four hundred thousand cubic yards of material will have to be removed from this slide before the end of the present fiscal year.

On the night of January 19-20 the rock bluff, some 300 feet in height, on the east bank of the Canal, immediately south of Gold Hill, broke away at a distance of several hundred feet to the east of the Canal, and a large part of the broken material moved into the Canal, entirely covering all tracks to the east of the center line. The total amount of material in the broken rock portion is estimated at about 500,000 cubic yards, but this bluff, which was quite flat on top, served to prevent the movement into the cut of a clay top-covering several feet in thickness, which lay to the eastward of it, some of which will now undoubtedly move into

the cut, so that it is estimated that the probable effect of the break just described will be to add not less than 1,000,000 cubic yards to the amount which will have to be removed from the cut by means of steamshovels.

Immediately south of the recent break is the "Purple Hill" by which the moving clay of the Cucuracha slide was divided in two, and which has served very effectually, on account of its superior height, to hold back a large amount of top-covering which would otherwise have come into the Canal. There are indications that the "Purple Hill," has been weakened on its north face by this break, and should this small hill break away and come into the cut, it would probably release an amount of moving material which would aggregate between half a million and a million cubic yards additional to that previously described.

A new slide has recently developed in the east bank of the Canal, about 325 yards north of the suspension bridge. The amount of material in motion is estimated at 125,000 cubic yards, the greater part of which consists of rock.

Closing Old Spillway of Cocoli Lake.

An earth dam, with concrete core wall, is being erected across the site of the old spillway of Cocoli Lake which lies west of Cocoli Hill. With the lake at its present normal elevation of 47 feet above sea level there was no danger of escape of water through the discarded cut, but when the lake becomes a part of Miraflores Lake, in the operation of the Canal, the surface of the water will normally be 55 feet above sealevel, which is about a foot below the top of the old spillway cut. The top of the core wall, which is 142 feet long, 9 feet high, and 18 inches thick above the broadened base, will be 60 feet above sealevel, and the earth dam will be 2 feet above that. The dam is about 30 feet wide at the top, with slopes two in one. Two lines of sheet piling have been driven along the core wall to about elevation 40.

The old spillway was designed to discharge into a tributary of the Rio Grande, and in preparing the site in 1908 the excavation had reached elevation 56 when the project was abandoned.

Tile Roof for Permanent Shops.

A contract has been entered into with the American Cement Tile Manufacturing Company for the manufacture and placing of tile for the roofs of the shop buildings at Balboa. It is estimated that 6,500 squares of tile 26 by 52 inches, with ridge rolls, and such flat tiles as may be required in valleys to form gutters between roofs, will be required. The contract price for tile is \$10.25 per square; ridge roll 55 cents per linear foot, flat tile plates 1½ inches thick at \$11.25 per square, tile with wire ribbed glass for use in special skylights at \$1.75 each. A second contract provides for placing the tile

The tile it is proposed to use is made by a special process. The Commission will furnish all cement, sand, water, a building for manufacture, power, light, and storage track, and the contractor will furnish the labor and the machinery and process. Each tile will be seven-eighths of an inch thick, 26 by 52 inches exposing 24 by 48 inches to the weather, weight per square foot 13½ pounds. The exposed surface will be dark red, and the under surface white, the colors being given in the process of manufacture. On the upper end of each tile is a hook or hanger for the connection on the roof purlin. Sideways the tiles will interlock by means of a rabbet and side roll, both of which form an integral part of the tile. Each row will overlap the lower row about four inches.

Materials to be used are clean, sharp, comparatively coarse sand, mixed with cement and water in proportions of 2½ to one. Each tile will be made on a metal pallet, and reinforced approximately one fourth of an inch from the underside by a sheet of expanded metal of No. 18 gage, weighing 3 pounds per sheet. After manufacture, the tile will season for at least thirty days before being placed. In place, they can stand a uniformly distributed load of 150 pounds per square foot.

The manufacture of the tile will be carried on in one of the buildings at Paraiso formerly used in the mechanical shops at that place.

Guard Railings for Spillways, and Doors for Machine Tunnels.

Bids will be asked in the near future for materials for guard railings around the upper approach, and lower wing and channel walls at Gatun spillway, and the lower wing and channel walls of Miraflores spillway. The railings will be 3 feet 6 inches high and will consist of three runs of galvanized iron pipe 2½ inches in diameter, with necessary uprights. Fifteen hundred feet of railing will be required at Gatun, and 500 feet at Miraflores, a total of 6,000 feet of pipe.

Bids will also be asked on 82 iron doors to close the entrances into the machinery tunnels from the copings of the walls of the locks. These doors will be about 6 feet high and 4 feet wide, and if practicable they will be locked with a combination lock, so as to avoid the necessity of carrying keys.

Upper Wing and Core Walls at Pedro Miguel Lock.

Mass concrete work at the upper end of Pedro Miguel Locks is being carried to completion with the construction of the wing and core walls on each side of the entrance to the lock. On the west side the walls are finished, having been carried, on a foundation of rock at approximately 37 feet above sealevel, into the core of Pedro Miguel Dam. The core wall is surrounded by puddled clay and on the water side the filling is protected by riprapping; behind the wall a backfill of earth and rock is being made even with the top of the

NOTES OF PROGRESS.

(Continued.)

wall, at 92 feet above sealevel. On the east side the flare wall is completed and the core wall is being tied into Cerro Luisa, beyond the old tracks of the Panama railroad, now used for the dirt trains coming from the south end of Culebra Cut. Excavation by task and the laying of concrete are carried on without interruption to traffic. The concrete is being brought up to the bottom of the stringers

supporting the tracks and to full height on either side of the tracks, leaving a temporary opening in the core wall.

Filling in Upper Approach Wall at Pedro Miguel.

A double-story trestle, over 60 feet high, has been constructed across the west side of the upper entrance to Pedro Miguel Lock to carry trains with fill for the cellular approach wall. Lumber from the dismantled storage trestle in the west approach was used for this construction and as the 12 by 12-foot supporting timbers were not longer than 30

feet, a second row of bents was erected on top of the first. The bents are placed about 15 feet apart, and made with the familiar trapezoidal section, with two uprights flanked by battering timbers. Crossing the approach at an angle of 44 degrees with the axis of the lock, to allow a curve on which the track may connect with the return track for towing locomotives on the cellular wall, the trestle is 192 feet long. It has a grade of two per cent, in passing from the wing wall, at 92 feet above sealevel, to the top of the approach wall, at elevation + 99.

The filling of the cells in the approach wall is to be carried to the top of the wall from natural bottom, at elevation approximately 37 feet. Until the water is in the Canal channel this fill will subject the cells to a heavy outward pressure, but so far there has been no indication of giving way. The fill is being made principally of earth.

CONCRETE WORK IN THE LOCKS.

Over 95 per cent of the total of 4,446,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on January 18, the amount in place being 4,245,472 cubic yards.

GATUN LOCKS

Over 94 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on January 18 being 1,929,306 cubic yards, out of a total of 2,043,730. A statement of the amount placed in the locks each working day of the week ending January 18, and of the total, follows; and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.				
January 13	1,120	18.68	4					1,120
January 14	1,274	21.24	4					1,274
January 15	1,212	20.20	4					1,212
January 16	1,258	20.96	4					1,258
January 17	1,318	21.96	4					1,318
January 18	1,136	18.92	4					1,136
Total	7,318	121.96	4					7,318
Previously reported								1,921,988
Grand total								1,929,306

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 905,625 cubic yards having been placed at the close of work on January 18. The record for each of the working days of last week, follows:

DATE.	2-cubic yard mixers.			1-cubic yard mixers.			Mixed by hand.	Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.					
January 13	238	30.50	5						238
January 14	339	37.00	5						339
January 15	293	34.00	5						293
January 16	284	31.50	5						284
January 17	266	26.00	5						266
January 18	215	24.00	4						219
Total	1,635	183.00	4.83						1,639
Previously reported									903,986
Grand total									905,625

MIRAFLORES LOCKS.

Over 94 per cent of the concrete for the system of two twin locks at Miraflores was in place January 18, the total amount on that date being 1,410,541 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.						Mixed by hand.	Large stone.	SPILLWAY.			Total.
				1-cubic yard mixers.			1-cubic yard mixers.					1-cubic yard mixers			
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			Concrete placed.	Hours worked.	No. of mixers	
	<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>		<i>Cu. Yds.</i>	
January 13	1,610	38.50	8				173	26.00	3			144	7.50	1	1,927
January 14	1,568	39.83	8	65	6.50	1	214	27.00	3			135	6.50	1	1,982
January 15	1,400	34.66	8	90	7.50	1	215	25.50	3			135	6.50	1	1,840
January 16	1,414	35.17	8	65	7.00	1	213	25.00	3			162	7.00	1	1,854
January 17	1,286	30.67	6	87	8.50	1	226	23.50	3			171	8.00	1	1,770
January 18	1,558	44.17	8	47	4.50	1	208	26.50	3			86	5.00	1	1,899
Total	8,836	223.00	7.67	354	34.00	83	1,249	153.50	3			833	40.50	1	11,272
Previously reported												3,693			1,399,269
Grand total												3,693			1,410,541

Gatun Dam Spillway.

The concrete work in the Spillway at Gatun Dam is over 95 per cent completed, 214,218 cubic yards, out of a total of 225,000, having been placed at the close of work on January 18. A statement of the amount laid each day last week, and of the total in place, follows:

DATE.	Concrete laid.	Hours worked.	No. mixers used.
	Cu. Yds.		
January 12	32	1.50	2
January 13	98	6.75	1
January 14	118	6.50	2
January 15	172	7.75	1
January 16	144	7.75	2
January 17	214	8.00	2
January 18	202	8.00	2
Total	980	46.25	
Previously reported	213,238		
Grand total	214,218		

Pilots, Masters, Mates, Engineers, Chauffeurs.

Examinations for pilots, masters, mates, engineers, and chauffeurs will be held by the Board of Local Inspectors at the Administration Building, Ancon, on Wednesday, January 29, 1913, beginning promptly at 8 a. m. All applicants for licenses must secure from the Executive Office, Department of Civil Administration, Ancon, forms of application and information respecting the filling out of same, not later than the day previous to the examination. In addition, applicants for chauffeurs' licenses must bring automobiles with which to demonstrate their ability to properly operate the same.

CANAL WORK IN DECEMBER.

Monthly Report of the Acting Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., January 15, 1913.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of December, 1912:

Department of Construction and Engineering.

Effective at the close of business December 12, the following changes were made in the organization of the Department of Construction and Engineering:

The Pacific Division was abolished. Mr. S. B. Williamson, Division Engineer, and Mr. John M. G. Watt, Assistant Division Engineer, having resigned, the positions were abolished. The work theretofore assigned to the Pacific Division is now in charge of the Chief Engineer, under the following officers who report directly to him:

Mr. H. H. Rousseau, Assistant to the Chief Engineer, in charge of the Second Division of the Chief Engineer's office, supervises the work on the Pacific terminal facilities, including the construction of shops, dry dock, coaling station and docks.

Mr. H. O. Cole, Resident Engineer, is in charge of the construction of Miraflores and Pedro Miguel locks, dams and spillway, dry excavation of the Canal prism south of Pedro Miguel, municipal work in that territory, Ancon quarry and transportation. This division is known as the Fifth Division, Chief Engineer's Office.

Mr. W. G. Comber, Resident Engineer, is in charge of dredging operations, Balboa shops, and the sand service. This division is known as the Sixth Division, Chief Engineer's Office.

The timekeeping work of the former Pacific Division was transferred to the Examiner of Accounts on December 28.

The costkeeping work was transferred to the Chairman's Office and placed under the direction of the Chief Cost Accountant, who furnishes the Resident Engineers and other officials the data which the costkeeping force of the former Pacific Division furnished to the various officials daily, to enable them to keep track of the costs of their work.

The changes are administrative only. The work will be performed with the same personnel as theretofore and with about the same organization, except for the division of work as above stated.

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the Division Engineer of the Atlantic Division, Resident Engineer Cole and the erection subdivision of this office. The inspection of this work is being cared for by the masonry and lock structures subdivision. This subdivision is also charged with general inspection of masonry work of all the locks.

INSPECTION OF INSTALLATION OF RISING STEM GATE VALVES, ERECTION OF SPILLWAY GATES AND CAISSONS, AND ASSEMBLY OF HYDRO-ELECTRIC DRAFT TUBES AT GATUN.

The work of erection of the spillway gates at Gatun was continued during the month and the fourteen gates required for that place were completed and accepted. Three of these

The following table summarizes the principal items of construction work accomplished by the construction divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	2d. Div.	5th Div.	6th Div.	Total.
Work excavation, dry	Cubic yards..	16,677	1,074,510	27,598	335,943	.....	1,454,728
Work excavation, wet	Cubic yards..	819,373	.....	191,975	.....	349,747	1,361,088
Total work excavation	Cubic yards..	836,050	1,074,510	219,566	335,943	349,747	2,815,816
Plant excavation, dry	Cubic yards..	.....	.....	.....	.....	.....	.....
Plant excavation, wet	Cubic yards..	.....	.....	.....	.....	.....	.....
Total plant excavation	Cubic yards..	.....	.....	.....	.....	.....	.....
Total Canal excavation	Cubic yards..	836,050	1,074,510	219,566	335,943	349,747	2,815,816
Material placed in dams	Cubic yards..	142,245	.....	.....	54,151	.....	196,426
Concrete placed at locks dams and spillways	Cubic yards..	8,763	.....	.....	54,144	.....	62,907
Explosives used	Tons (Gross)	31.95	143.81	10.277	74.07	11	271.107
Rock drilled	Feet	25,692	381,376	6,776	111,330	6,770	531,944
Tracks removed	Miles	.....	7.52	.....	.....	.....	7.52
New tracks laid	Miles	3.018	11.02	.....	2,595	.....	16.633
Rock crushed	Cubic yards..	.....	.....	.....	56,620	.....	56,620
Cement used	Barrels	13,873	27	.....	63,142	9	77,051
New roads built	Miles	2.5	.10	.....	.....	.....	.365
Water mains laid	Feet	410	.....	.....	3,023	.....	3,433
Sewers laid	Feet	.....	.....	.....	.....	.....	.....
Open drains and ditches dug	Feet	39,732	53,093	.....	2,495	.....	95,320
Average daily force	.....	4,540	6,697	733	5,889	1,281	19,140
Average rainfall	Inches	10.65	4.45	.....	4.42	.....	6.51

gates were installed in position on the spillway dam.

Work was begun on the erection of the caisson at Gatun and was about 50 per cent completed at the close of the month.

No work was done on the spillway gates at Miraflores, nor was any work done on the caisson for that point.

Work was continued on the preparation of rising stem gate valve machinery chambers at Gatun and Pedro Miguel and satisfactory progress is being made. Similar work was begun at Miraflores, but no valves were installed.

Work was continued on assembly and riveting of draft tubes for the hydro-electric station at Gatun.

LOCK GATES AND PROTECTIVE DEVICES.

Owing to illness of the assistant engineer in charge of the inspection in the United States, the report covering shop work accomplished during the month was delayed and will be included in the report for January. Up to December 5, a total of 49,707 tons of riveted structural steel had been shipped from the Rankin shops for the 92 leaves to be erected, or about 97 per cent of the total contract weight of this class. In addition, there were 321 tons of spare parts shipped. Erection work was pushed with much energy by the contractors. The total tonnage of lock gate material erected on January 1 in the different locks, without regard to its being fully reamed or riveted, was 36,030 tons, out of a total of 58,000 tons, or about 62 per cent. Of this, 2,738 tons, or about 4½ per cent, were erected during the month. The number of field rivets driven was 2,621,405, or about 41 per cent of the total number, of which about 6 per cent of the total, were driven during December. The tonnage erected was about 1 per cent greater and the number of rivets driven about the same as for the preceding month. The status of the work in the several locks may be summarized as follows:

Gatun—Work is in progress on all the leaves, 40 in number. Erection, 75 per cent completed; reaming, 73 per cent completed; riveting, 54 per cent completed; finishing, 10 per cent completed.

Pedro Miguel—Work is in progress on the entire 24 leaves. Erection, 81 per cent completed; reaming, 77 per cent completed; riveting, 59 per cent completed.

Miraflores—Work is in progress on 12 out of the 28 leaves. Erection, 30 per cent completed; reaming, 11 per cent completed; riveting, 6 per cent completed.

LOCK GATE RECESS COVERS.

All recess covers at Gatun have been aligned and riveted and but 2 of the 40 remain to be grouted. At Pedro Miguel, all have been completed. At Miraflores, 20 out of the 24 have been erected and 18 of this number have been riveted, but no aligning or grouting has been done.

CHAIN FENDERS.

As stated in the report for November, the machine proper has been erected in pits 812-813 at the upper end of Gatun locks, in the east chamber. During the month work progressed on the piping in these two pits; at the end of the month that in No. 813 was 80 per cent completed and that in No. 812 was 20 per cent completed. The tank and pump were placed in position in pit No. 813. The decking is in place over both these pits. The concrete has been practically completed for pit No. 812, but none for pit No. 813. The decking and the piping are also in place in many of the other pits.

INSPECTION AND ERECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection of the operating machinery and electrical equipment. The contractors are generally behindhand in their deliveries, but progress is being made with view to bringing the rates of delivery up to the promised schedule. The rate of installing the machines keeps pace with the receipt of the various parts. On account of the late deliveries of electrical material, the force for the electrical work is not being recruited as fast as provided in the schedule. The following tabulations are given as a summary of the work:

RISING STEM GATE VALVES.

	Gatun—56		Pedro Miguel—24	
	*Assembled	Placed.	Assembled.	Placed.
During mo.	15	12	8	5
To date	35	35	22	15

*Valves assembled with seals after being placed.

FIXED IRONS AND TRACKS FOR RISING STEM GATE VALVES.

	Gatun—112	Pedro Miguel—48
	Milled or Ground.	Milled or Ground.
During mo.	4	1
To date...	54	15

	Miraflores—72
	Milled or Ground.
During month.....	1
To date.....	1

GUARD VALVES.			
	Gatun—6	Pedro Miguel—6	
	Assembled. Placed.	Assembled. Placed.	
During mo.			
To date.....	6		

	Miraflores—6.
	Assembled. Placed.
During Month.....	
To date.....	

RISING STEM GATE VALVE MACHINES.			
	Gatun—56.		
	Received.	Partially installed.	Installed.
During month.....	10	8	12*
To date.....	50	17	25

	Pedro Miguel—24		
	Received.	Partially installed.	Installed.
During month.....	0	2	5*
To date.....	24	7	15

	Miraflores—36.		
	Received.	Partially installed.	Installed.
During month.....	8		
To date.....	17		

*Machines completed except bottom seals machined—7 at Pedro Miguel, and 9 at Gatun.

RACK TRACK.
(In one-foot units.)

	Gatun—21,945 feet.			
	Dist.	Track laid.	Frozen.	Completed.
During month.	1,252	1,252	842	2,657
To date.....	17,776	17,776	16,030	12,482

	Pedro Miguel—13,213 feet.			
	Dist.	Track laid.	Frozen.	Completed.
During month.	1,001	1,021	496	
To date.....	9,568	9,317	6,691	6,301

	Miraflores—19,031.			
	Dist.	Track laid.	Frozen.	Completed.
During month..	1,104	48	48	
To date.....	1,104	48	48	

CYLINDRICAL VALVE MACHINES.			
	Gatun—60.		
	Received.	Partially installed.	Installed.
During month.....		20	16
To date.....	60	25	35

	Pedro Miguel—20.		
	Received.	Partially installed.	Installed.
During month.....			20
To date.....	20		20

	Miraflores—40.		
	Received.	Partially installed.	Installed.
During month.....	16	2	
To date.....	36	20	

AUXILIARY CULVERT VALVE MACHINES.

	Gatun—4.		
	Received.	Partially installed.	Installed.
During month.....			4
To date.....	4		4

	Pedro Miguel—4.		
	Received.	Partially installed.	Installed.
During month.....			
To date.....	4	4	

	Miraflores—4.		
	Received.	Partially installed.	Installed.
During month.....	2		
To date.....	4		

Two machines received to date for Miraflores.

MITER GATE MOVING MACHINES.			
	Gatun—40.		
	Received.	Partially installed.	Installed.
During month.....	9	7	1
To date.....	12	23	4

	Pedro Miguel—24.		
	Received.	Partially installed.	Installed.
During month.....	11	2	
To date.....	11	15	

	Miraflores—28		
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

MITER FORGING MACHINES.			
	Gatun—20.		
	Received.	Partially installed.	Installed.
During month.....			
To date.....	1		1

	Pedro Miguel—12.		
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

	Miraflores—14		
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

MITER GATE RECESS COVERS.			
	Gatun—36.		
	Placed.	Frozen.	Completed.
During month.....			2
To date.....	36	26	17

	Pedro Miguel—20.		
	Placed.	Frozen.	Completed.
During month.....		5	
To date.....	20	16	

	Miraflores—24.		
	Placed.	Frozen.	Completed.
During month.....			
To date.....			

ELECTRICAL WORK—ATLANTIC DIVISION.

Conductor rails, insulators, brackets and cover plates were installed on 2,093 feet of straight and 770 feet of curved track, making a total to date of 17,226 feet. Of this, 8,576 have been equipped with steel conductor bar and 8,650 feet with copper conductor bar. Progress has been made in pulling cable into the conduit system, a total of 175,482 feet having

been pulled to date, of this total, 10,240 feet have been protected with tile in the man-holes. A total of 235,312 feet of duct has been rodded, cleaned, and wired. Twenty-six control panels for cylindrical valve machines were assembled ready for conduit and cable work. At Gatun 18 cylindrical valve machines and 4 rising stem valve machines were tested and operated satisfactorily. Miter gate moving machines Nos. 35 and 36 were operated successfully, swinging the gate free in the dry.

ELECTRICAL WORK—PACIFIC DIVISION.

Pedro Miguel—Conductor rails, insulators, brackets and copper plates were installed on 2,656 feet of track, making a total to date of 5,694 feet. Of this amount, 1,920 feet have been equipped with steel and 3,774 feet with copper conductor rail. A total of 10,405 duct feet of vitrified tile conduit was rodded, cleaned and wired; a total of 94,466 duct feet has been prepared to date. There were installed in the north approach wall 2,475 duct feet of fiber conduit, making a total of 9,017 feet to date. During the month 160 feet of iron conduit were installed. There were 10,300 feet of 3-conductor No. 0000 cable installed, making the total 12,700 feet. During the month 3,360 feet of 3-conductor No. 00 cable were also installed.

Miraflores—Preparatory to installing cable, 8,740 feet of duct were rodded, cleaned and wired.

All tunnels at Pedro Miguel and Miraflores were examined for leaks and methods of waterproofing are being experimented upon. At Pedro Miguel, preliminary test was made on rising stem valve machines Nos. 314 and 315.

EMERGENCY DAMS.

Inspection was in progress at seven localities in the United States and 385 tons of material were accepted. At the end of the month 7,534 tons had been fabricated and accepted. About 736 tons were delivered on the Isthmus during the month and approximately 712 tons were erected. On December 31 a total of 5,606 tons had been delivered and 2,686 tons erected. Work was in progress on the east and west dams at Gatun.

AIDS TO NAVIGATION.

Ten range towers of the Atlantic and Pacific type, including foundations, were completed, except that six steel lantern doors must be hung, stair railing erected, towers painted and permanent lights installed in each. Seven range towers of the Gatun Lake Section type, with foundations, were completed, except that doors must be hung, steel ladders erected, lantern glass set in place, towers painted and permanent lights installed in each. Two foundations for Atlantic and Pacific type of towers were completed and one tower begun. Three skeleton tower beacons, including foundations, for the Pacific end were completed except that permanent lights must be installed. The caisson for the west breakwater light was completed to a height of 25 feet and sunk at the inner end of Limon Bay in 20 feet of water, where it will remain until its riprap foundation at the outer end of the west breakwater is completed. During the month work was in progress on the erection of range towers Nos. 2, 17, 18 and 11, Gatun Lake Section, electric light line, and in the making of necessary surveys and reconnaissances.

SECOND DIVISION—OFFICE OF THE CHIEF ENGINEER.

The work on the Pacific terminals, including the construction of shops, dry dock, coal-ing station and docks, was transferred to the Second Division, December 12, when the Pacific Division was abolished. The following work was accomplished during December:

EXCAVATION.	
<i>Steamshovel.</i>	<i>Cu. Yds.</i>
Sosa Hill	19,251
Foundations	750
Dry Dock	3,751
<i>Hand.</i>	
Sinking piers	1,940
Shop foundations	853
Sosa Dam toe	534
Sosa Hill	519
Total	27,598

The foregoing was distributed as follows:

	<i>Cu. Yds.</i>
Preparing site	20,304
Dry excavation	3,751
Foundations for shops	1,603
Sinking caissons for piers	1,940
Total	27,598

FILLING AND EMBANKMENT.

	<i>Cu. Yds.</i>
Preparing site .. work	27,803
Yards and tracks .. work	10,301
Sand line .. plant	1,149
Total	39,253

CONCRETE PLACED.

	<i>Cu. Yds.</i>
Caissons	817
Shop foundations	251
Total	1,068

GENERAL REMARKS.

Excavation by steamshovel was continued in Sosa Hill, and excavation in the entrance to Dry Dock No. 1 was begun on December 27. The old Balboa yards of the Panama railroad were removed in the vicinity of the dry dock. A new sand and general service track was built to Diablo Hill to connect the sand dock and lumber wharf to a proposed connection at Corozal with the main line; this track will allow the removal of the remaining tracks in the vicinity of the proposed shops.

METEOROLOGY AND HYDROGRAPHY.

The usual observations and measurements were continued during the month.

FIFTH DIVISION—OFFICE OF THE CHIEF ENGINEER.

This division was established December 12, 1912, and comprises all the work of the former Pacific Division, except dredging operations, Balboa shops and the sand service, and the construction of terminal facilities. In the following is included work done from December 1 to 12 inclusive by that part of the Pacific Division which now comprises the Fifth Division.

DISTRICT NO. 1—LOCKS, DAMS, AND DRY EXCAVATION.

Excavation—The total excavation during the month amounted to 335,943 cubic yards, of which 251,175 cubic yards were classified as rock and 84,768 cubic yards as earth.

Filling and embankment—During the month 11,696 cubic yards of dry filling were added to the prism of the Pedro Miguel west dam, increasing the total amount of material in place at the end of the month to 670,680 cubic yards. The backfill at Pedro Miguel was increased by 14,416 cubic yards, the total

quantity in place at the close of the month being 774,947 cubic yards.

At Miraflores, the dry filling in the toes of the west dam was increased by 42,485 cubic yards, making the total quantities of dry and hydraulic filling in place at the end of the month 1,489,419 cubic yards and 661,048 cubic yards, respectively. The backfill at Miraflores was increased by 96,639 cubic yards, the total amount in place at the close of the month being 1,071,757 cubic yards.

OPERATION OF THE AUXILIARY CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours)	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	6.80
Average number of mixers per day	4.68
Average hourly output per mixer, actual working time (cubic yards)	9.28
Large rock laid (cubic yards)	6,958.00
Concrete laid (cubic yards)	6,958.00
Total concrete laid (cubic yards)	6,958.00

Average number of one-half cubic yard mixers, 4.68, output of which was placed by hand, by derricks, and by mixers discharging directly into forms.

Pedro Miguel Locks—Excavation was continued in the Canal prism south of the locks and in the foundation of the lower guide wall. Backfilling of the two side walls and north wing walls was continued. The concrete work consisted of the construction of the north wing walls, caisson sill in forebay, and installation of electric cable ducts. Fixed irons aggregating 36,341 pounds were placed in the lock masonry. The total amount of concrete and large stone laid at Pedro Miguel was 6,958 cubic yards, as compared with 7,972 cubic yards for November. The concrete was placed as follows: Two thousand five hundred and sixty-two yards in the northeast wing wall, 185 cubic yards in the northwest wing wall, 283 cubic yards in the east wall, 28 cubic yards in the center wall, 1,290 cubic yards in the west wall, 792 cubic yards in the floors, 1,728 cubic yards in the south center guide wall, 39 cubic yards around ducts in area A, and 51 cubic yards around ducts in area C.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	8.00 & 12.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	4.96	5.49
Average number of mixers per day	7.84	3.96
Average hourly output per mixer, actual working time (cubic yards)	42.68	9.17
Average amount of concrete and large stone laid per hour per berm or chamber crane (actual working time) (cubic yards)	50.32	
Large rock laid (cubic yards)		
Concrete laid (cubic yards)	35,468.00	12,718.00
Total concrete laid (cu. yds.)	35,468.00	12,718.00

Permanent plant consisted of four berm cranes and

four chamber cranes. Berm cranes E and F worked 12 hours a day from December 1st to 14th. Chamber cranes Nos. 1 and 3 worked 12 hours a day from December 1st to 14th.

Auxiliary plant consisted of two 1-cubic yard mixers, having a daily average of 1.16; five ½-cubic yard mixers, having a daily average of 2.08; and three locomotive cranes and derricks, having a daily average of 1.16.

Miraflores Locks—Dry excavation was continued in the Canal prism south of the locks, the material being used for backfilling the locks, filling on the west dam and for swamp reclamation. Excavation of the spillway was continued. Concrete work consisted of the construction of the north approach and wing walls and the extension of the west wall, south guide wall, operating tunnels, sills and floor of lower west chamber, and the northeast core wall. Fixed irons aggregating 529,148 pounds were placed in the masonry. The total amount of concrete and large stone laid at Miraflores was 48,186 cubic yards, which was placed as follows: Two thousand four hundred and sixty-seven cubic yards in the north center guide wall, 194 cubic yards in the northwest wing wall, 215 cubic yards in the northeast wing wall, 1,413 cubic yards in the east wall, 4,431 cubic yards in the center wall, 11,271 cubic yards in the west wall, 7,704 cubic yards in the floors, 19,766 cubic yards in the south center guide wall, 440 cubic yards in the northeast core wall, 181 cubic yards around ducts in area A, 14 cubic yards around ducts in area B, and 90 cubic yards around ducts in area C.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

Reservoirs, water mains, sewers and oil pipe lines were maintained and extended as required to facilitate construction work.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day (hours)	8.00
Average number of hours per day (actual working time)	7.81
Average number of cubic yards crushed per hour per working day	252.09
Average number of cubic yards crushed per working hour	289.97
Total output for the month (cubic yards) ..	56,620.00

SIXTH DIVISION—OFFICE OF CHIEF ENGINEER.

To the Sixth Division of the Chief Engineer's Office, which was established December 12, has been assigned that part of the work of the former Pacific Division covering dredging operations, Balboa shops and the sand service. In the following is included work performed by that part of the Pacific Division from December 1 to December 12, inclusive which now comprises the Sixth Division.

The following is a statement of the output of the seven dredges which were in operation during the month and of the amount of material excavated hydraulically:

DREDGE.	Type.	WORK.			PLANT.		Total.	Remarks.
		Earth.	Clay.	Rock.	Earth.	Rock.		
		<i>Cu. Yds.</i>	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>		
Badger	Ladder	28,575		4,396			43,961	Place measurement
Cardenas	Dipper		2,694	8,084	15,699		26,477	Place measurement
Corozal	Ladder		42,636	69,564			112,200	Place measurement
Culebra	Suction	158,465			14,027		172,492	Scow measurement
Marmot	Ladder	1,060		7,816			13,248	Place measurement
Mole	Ladder		1,970	9,125			11,095	Scow measurement
No. 85	Hydraulic				162,242		162,242	Place measurement
Total		188,100	62,662	98,985	191,968		541,715	

Chamé Sand Service—Approximately 35,000 cubic yards of sand were excavated at Punta Chame and delivered to the Balboa sand bins.

Balboa Shops—The manufacturing and repair work in the shops and shipways was satisfactorily performed during the month.

Atlantic Division.

GATUN LOCKS.

Excavation—There were 26,281 cubic yards excavated during the month; of this amount, 20,215 cubic yards were removed in preparing foundations for the lock walls.

Backfill—Backfilling behind the side walls was continued, the quantity placed during the month aggregating 33,232 cubic yards. The total amount placed to January 1 was 1,941,587 cubic yards. On that date the work was 96.12 per cent completed.

Receiving and issuing material—No rock was received during the month; 9,065½ cubic yards were issued. The issues of sand amounted to 4,567 cubic yards; 300 cubic yards were added to the storage pile as a by-product from rock screening. There were 37,419½ barrels of cement received and 10,593½ barrels issued.

Mixing and placing plants—Plant No. 1 and portable mixers were kept in satisfactory operation during the month.

Concrete work—A total of 5,696½ cubic yards of concrete was laid, distributed as follows: Upper lock, 672½ cubic yards; middle lock, 747 cubic yards; middle lock, 4,277 cubic yards.

On December 31 the concrete work was 93.1 per cent completed.

OPERATION OF CONCRETE CONSTRUCTION PLANT.

Length of working day (hours)	9.00
Average number of hours per day worked per strand of cableway laying concrete (actual working time)	1.13
Average number of mixers per day	2.00
Average hourly output per mixer (actual working time) cubic yards	59.91
Average amount of concrete laid per hour, per strand of cableway (actual working time) cubic yards	27.27
Concrete laid (cubic yards) cableways	5,329½
Concrete laid (cubic yards) derricks .....	.....
Concrete laid (cubic yards) portable mixers	318½
Concrete laid (cubic yards) hand mixers	48½

Total amount of concrete laid (cubic yards) 5,696½

GATUN DAM.

Construction during the month increased the total fill, as determined by cross section of the material in place deposited during the month by 142,245 cubic yards, making the total amount in place 21,068,080 cubic yards. On January 1 the dam was 95.8 per cent completed.

Hydraulic fill—There was no increase made in the hydraulic fill, the total in place remaining at 10,124,082 cubic yards.

Dry fill—Allowing an arbitrary reduction of 50,000 cubic yards to cover slow consolidation in slopes not cross-sectioned, additional material received from steamshovels amounting to 142,245 cubic yards was placed on the north and south toes of the dam east and west of the spillway, making the total dry fill in place 10,943,998 cubic yards. Cross-section of the month's dry fill shows a loss of 2.9 per cent from car measurement.

Hydro-electric plant—During the month 1,462 cubic yards of earth and rock were removed by hand and crane in the preparation of foundations, making a total excavation of 97,711 cubic yards. There were 93 cubic yards of concrete placed, making the total to date 649 cubic yards.

GATUN SPILLWAY.

Backfill—No backfilling behind the spillway walls was done during the month, the

total on December 31 remaining at 16,495 cubic yards.

Concrete—A total of 3,066 cubic yards of concrete was laid during the month. Concrete work for the spillway is 94 per cent completed.

Excavation—There was no material excavated during the month, the total remaining at 1,591,261 cubic yards.

HARBOR AND CHANNEL SECTION.

Dredging from the ocean to Mindi—Seven dredges removed 746,285 cubic yards of earth and 68,088 cubic yards of rock from the Canal prism. In addition, the dredge *Mindi* removed 13,885 cubic yards of earth and 16,294 cubic yards of rock from the slip between docks 16 and 17, Panama Railroad Company's Cristobal Terminal Docks. On December 31 forty feet of water could be carried from zero to zero plus 2,100 feet, 35 feet to mile post 4 plus 3,350 feet, 30 feet to mile post 6 plus 600 feet, 20 feet to mile post 6 plus 1,765 feet, 10 feet to mile post 6 plus 2,800 feet. The *Terrier* drilled 4,052 feet, used 31,160 pounds of dynamite and shot 11,741 cubic yards of earth and 31,763 cubic yards of rock to minus 45 feet, mean sealevel.

West breakwater, Colon—There were 92 lineal feet of single track trestle driven during the month. The trestle was completed on January 1, its total length being 11,526 feet. There were 16,034 cubic yards of Porto Bello rock unloaded, of which 9,039 cubic yards were handled by cranes and 6,995 cubic yards by the derrick barges, making the total amount unloaded to January 1st 134,590 cubic yards.

MUNICIPAL ENGINEERING.

New Colon waterworks—During the month the walls for the sump pumps were built up to the level of the floor of the pump station and the sump was practically completed. Approximately 3,000 cubic yards of material were removed in preparing for foundations of the filter building, the excavation being 98 per cent completed at the close of the month.

The reservoirs, water mains, sewers, roads and oil pipe lines were maintained and extended as required to facilitate construction work. Work was continued on the Colon street improvements, the macadamizing being completed as far as possible at present.

Central Division.

During the month the total amount of material excavated was 1,074,510 cubic yards, of which 125,264 cubic yards were classified as earth and 949,246 cubic yards as rock. The entire amount was removed by steamshovels. Of this total, 1,016,866 cubic yards were primary excavation in the Canal prism and 57,644 cubic yards from the Obispo Diversion.

The daily average number of steamshovels at work was 34.28 and the total number of shovel days was 857, as compared with 36.45 shovels at work and 856½ shovel days in November. For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table is presented:

Period	Excavated by shovels.	Classification of material.			Av. No. of shovels at work	W kg. days.	Av. yards per shovel per day.
		Rock.	Earth.				
1911	Cu. Yds.	Cu. Yds.	Cu. Yds.				C. Y.
Dec. 1911	1,351,052	1,189,597	161,215	41.54	25		1,301
Dec. 1912	1,074,510	949,246	125,264	34.28	25		1,254

Rainfall at Empire: 1911, .20 ins.; 1912, 3.71 ins.

The above table shows the average output

pershovel to be 3.61 per cent less in December, 1912 than in the corresponding month of 1911.

The total amount of material excavated from the Culebra section in December, 1912—1,074,510 cubic yards—was the lowest record in that section for the month of December since 1906; in December of that year only 307,689 cubic yards were removed.

[NOTE—The actual excavation accomplished in the Canal prism during December amounted to 1,044,618 cubic yards, and on the Obispo Diversion 29,892 cubic yards, the difference shown above being due to adjustment of 27,752 cubic yards which were incorrectly included in prism excavation in the report for November.]

The total estimated amount of material (dry excavation) to be removed in the Central Division, according to revised estimate of July 1, 1912, was 106,116,221 cubic yards, and up to January 1, 1913, 100,887,019 cubic yards had been removed, leaving 5,239,202 cubic yards to be removed in order to complete all dry excavation. From these figures it will be seen that 95.06 per cent of all excavation in this division was completed on December 31, 1912. At the close of December's operations the status of the excavation in the two sections which compose this division was as follows:

CULEBRA CUT.	Cu. Yds.
Completed	88,492,364
To be completed	5,239,202
	93,731,566
CHAGRES SECTION.	Cu. Yds.
Completed	12,384,655

Thus it will be seen that the Culebra Cut is 94.41 per cent completed.

The Chagres Section is entirely completed, so far as dry excavation is concerned, but it is estimated that about 300,000 cubic yards of wet excavation will have to be made in this section.

Work performed for the Fifth Division included the removal of 15,548 cubic yards of rock by steamshovels, the drilling of 5,152 lineal feet of holes, the use of 8,000 pounds of dynamite in blasting, and miscellaneous service such as transportation of spoil, dumping, etc.; all done in connection with the Miraflores spillway.

During the month 4,378 cubic yards for material were dumped on the embankment for the new roadbed of the relocation of the Panama railroad, increasing the total amount furnished for this purpose to 4,471,187 cubic yards.

For use in the construction of the Gatun dam, 1,836 cubic yards of rock were furnished to the Atlantic Division, making the total amount of material furnished for this purpose 5,419,751 cubic yards.

There were also furnished during the month to the Panama Railroad Company, for the Cristobal mole, 32,533 cubic yards, the total amount furnished to December 31 for this purpose being 151,580 cubic yards.

During the month there was employed a daily average of 6,145 laborers, while the average number of gold men working was 552.

Quartermaster's Department.

Labor—The force report of December 25 showed 39,499 men actually at work; this number includes the force of the McClintic-Marshall Construction Company. The shortage of unskilled labor continued throughout the month. However, when the 500 laborers recently recruited in Barbados arrive on the

Isthmus the situation will be relieved to an extent.

Buildings—Alterations to the Hotel Tivoli were entirely completed and additions were built to the commissaries at Corozal and Paraiso.

Quarters—The congestion of gold bachelor quarters at Gatun and Corozal continued. Moving the courthouse from Gorgona to Pedro Miguel and converting it into gold bachelor quarters relieved the situation at the latter point.

Material and supplies—The total value of material received was \$882,383.51. This material came forward in 31 steamers, the total weight of cargo, exclusive of lumber, piling and ties, being 30,755 tons.

Subsistence Department.

The operation of the line hotels resulted in a net loss of \$43.54. The Hotel Tivoli showed a net profit of \$8,003.51. European laborers' messes, colored laborers' kitchens, restaurants, penitentiary, tugs and dredges returned a net profit of \$2,688.93. The total net profit on subsistence operations during the month was \$10,648.90.

Department of Civil Administration.

COURTS

During the month 132 civil and 50 criminal cases were disposed of in the Circuit Courts, and 45 civil and 666 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES.

Money order sales amounted to \$423,851.53 and the fees to \$2,115.57. Receipts from stamp and card sales and newspaper postage aggregated \$10,686.21. The total collection of revenues made was \$48,057.37, and the collections on account of court fines, costs and fees \$4,607.88. A total of \$113,538 was deposited in postal savings accounts and a total of \$102,987 was withdrawn. At the port of Ancon 20 vessels entered and 25 cleared, and at the port of Cristobal 21 entered and 22 cleared.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 665, of whom 593 were men and 72 women. Twenty-three nations or 43 separate states and dependencies were represented. There were 11 convicts committed to the penitentiary and 19 were discharged, leaving 119 convicts in confinement at the close of the month. The cost of guarding and subsisting these convicts was \$2,547.34 and the value of the work performed by them on the roads of the Canal Zone was \$2,139.20.

DIVISION OF FIRE PROTECTION.

There were eight fires reported in the Canal Zone. The damage to Commission property was \$120.

DIVISION OF PUBLIC WORKS.

In the city of Panama the daily average consumption of water was 1,752,419 gallons, and in Colon 1,368,953 gallons. The usual inspection and maintenance work in this division was performed.

DIVISION OF SCHOOLS.

The net enrollment in the white schools was 1,241, the average number of pupils belonging was 1,094.6, and the average daily attendance 1,025. In the colored schools the net enrollment was 1,165, the average number of pupils belonging was 946.9, and the average daily attendance 780.5. At the close of the month there were employed in the white schools 47 teachers and in the colored

schools 31 teachers, the total being four greater than the number employed at the close of the preceding month.

Department of Sanitation.

The total number of deaths from all causes among employes was 32, divided as follows: from disease 23 and from violence 9, giving an annual average per thousand of 5.13 and 2.01 respectively. The annual death rate per thousand among employes for the month of December, 1911, was 10.42.

The annual death rate per thousand in the Canal Zone and in the cities of Colon and Panama, including both employes and non-employes, was 20.99. This rate is based upon a population in the Canal Zone of 62,810 according to the census of February, 1912, and populations in Colon and Panama of 20,232 and 47,172, respectively, as estimated by the Department of Sanitation. The annual average death rate per thousand among the same classes of population for the month of December, 1911, was 20.30.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was: whites 3.74, blacks 5.56, giving a general average for disease of 5.13. For the same month during 1910 the annual average death rate per thousand from disease among whites was 5.59, blacks 8.79, giving a general average of 7.94; and for the same month during 1911, whites 5.71, blacks 5.68, giving a general average of 5.68.

Among employes during the month, deaths from the principal diseases were as follows: Lobar pneumonia 6, malaria fever, E. A., 1, organic disease of heart 1, tuberculosis 6, leaving 9 deaths from all other diseases and 9 deaths from external violence.

No case of yellow fever, small pox or plague originated on or was brought to the Isthmus during the month.

Respectfully,

H. H. ROUSSEAU,

Acting Chairman and Chief Engineer.

Proposals for Furnishing Plants and Seeds.

OFFICE OF DEPOT QUARTERMASTER,

MOUNT HOPE, C. Z., January 6, 1913.

Sealed proposals will be received at the office of the Depot Quartermaster, Mount Hope, until three o'clock p. m., February 1, 1913, when they will be opened in the presence of attending bidders, for furnishing, in cars at any station on the Panama railroad, 1,200 cocoanuts, 1,000 sugar cane plants and 5,000 white yam heads for planting; 1,000 plantain plants, one bushel seed sweet potatoes, two bushels Kafir corn seed, and two bushels sorghum cane seed. Best quality only is desired and samples must be submitted. Proposals should show unit prices. Cocoanuts are to be supplied at earliest practicable date and the other items to be delivered during April, 1913. The right is reserved to reject any or all bids, or any combination of bids. Envelopes must be plainly marked; "Proposals for furnishing plants and seeds, to be opened February 1, 1913," and addressed to

C. NIXON,

Purchasing Agent on the Isthmus.

Sale of Gasoline Engine.

OFFICE OF DEPOT QUARTERMASTER,

MOUNT HOPE, C. Z., January 11, 1913.

Sealed bids will be received at the Office of the Depot Quartermaster, Mount Hope, until 3 p. m., January 30, 1913, when they will be opened in the presence of attending bidders, for the purchase of one $7\frac{1}{2}$ horsepower "Buffalo" gasoline engine, recently removed from the police launch *Chagres*. This engine may be seen at this Depot on any working day between the hours of 7 to 11 a. m., and 1 to 5 p. m. The right is reserved to reject any or all bids. Bids must be plainly marked "Proposal for purchase of gasoline engine, to be opened January 30, 1913," and addressed to

C. NIXON, Depot Quartermaster.

LOST—Seven \$10 bills in Ancon or Panama on January 15. Reward if returned to police station, Ancon.

LOST—Will the purchaser of 400-mile mileage book No. 1812 please communicate with the Ticket Agent, Panama railroad station, Colon.

OFFICIAL CIRCULARS.

General Workmanship and General Conduct Report of Shop Employes on Termination of Service.

CULEBRA, C. Z., January 15, 1913.

CIRCULAR No. 309-c:

Paragraph (b) of Section 5 of Circular No. 309-B, dated December 6, 1912, is hereby changed to read as follows:

The rating of "good" will be given to those employes who have received not more than one warning letter in regard to conduct while on duty in any service year, who have received not more than two letters in regard to absence without prior permission in any service year, and who have received not more than four cautionary letters in any one service year in regard to failure to check in or out, and whose conduct otherwise has been equal to the average in the shop.

H. H. ROUSSEAU,

Acting Chairman and Chief Engineer.

Signature to Pay Receipts by Mark.

EMPIRE, C. Z., January 14, 1913.

CIRCULAR No. 40:

The following is an extract from a recent decision of the Comptroller of the Treasury, relative to signatures by mark to pay receipts where the employe is unable to write his name.

"In a signature by mark the vital part is the mark made by the signer and the witness to the making of the mark.

The name of the signer and the words "his mark" may be prepared before the signing, where it is known the signing will be by mark, and I see no reason why the name may not be in typewriting and the words "his mark" by a ruber stamp, the signer's mark and the witness's signature to be made in ink."

In accordance with this authority all pay receipts of silver employes who do not sign their own names may be completed on the typewriter at the time the receipt is written.

The names of employes who sign their own names should not be so placed on the receipts. This includes clerks, timekeepers, foremen and any others who are known to write.

The signature of the witness must be a responsible timekeeper and must not be placed on the receipt until it is delivered or paid.

Rubber stamps can be used for inserting the words "his mark" between the first and last names of employes, leaving sufficient space for the employes' mark between the two words. T. L. CLEAR,

Approved: Acting Examiner of Accounts.

H. H. ROUSSEAU,

Acting Chairman and Chief Engineer.

Classified Expenditure Accounts.

EMPIRE, C. Z., January 9, 1913.

CIRCULAR No. 39:

The following new account in classified expenditures of the Isthmian Canal Commission has been authorized under "Construction and Engineering—Atlantic Division

Account 320—Trinidad River Dam.

(a) Construction.

To this account will be charged a proper proportion of the salaries and expenses of the supervising force of the division, and the salaries and wages of all officers and employes engaged directly on the construction of a dam in the upper reaches of the Trinidad River; also the cost of all material, supplies and incidental expenses used in connection therewith and suitable depreciation on plant equipment used in this work.

(b) Plant.

To this account will be charged all plant assigned to the work of constructing the Trinidad River dam, and credited with plant transferred from that work together with plant arbitrarily applied to construction account 320-A above. T. L. CLEAR,

Approved: Acting Examiner of Accounts.

H. H. ROUSSEAU,

Acting Chairman and Chief Engineer.

Acting Chief Sanitary Officer.

CULEBRA, C. Z., January 13, 1913.

CIRCULAR No. 473:

Effective this date and during the absence of Col. W. C. Gorgas, Col. John L. Phillips is designated as Acting Chief Sanitary Officer.

H. H. ROUSSEAU, Acting Chairman.

Mail for the Panama Railroad Company.

PANAMA RAILROAD COMPANY,

COLON, R. P., January 13, 1913.

CIRCULAR No. 8:

HEADS OF DEPARTMENTS, ISTHMIAN CANAL COMMISSION:

In communicating with Heads of Departments of this company, through the Zone mails, please address such mail to Cristobal, Canal Zone, instead of Colon. J. A. SMITH, General Superintendent.

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

The speakers at the open session of the Canal Zone Federation of Women's Clubs, on Saturday afternoon, January 25, will be Dr. Edward Devine, of New York, and Dr. Cueva Garcia, minister resident of Ecuador to the Republic of Panama. Dr. Garcia will speak on the educational outlook of Panama and Central America. A program of music has also been arranged. This program will be followed by an informal reception.

The meetings of the Gatun Woman's Club during the past month have been unusually well attended the members showing unusual interest in the programs presented. Discussions on current events have been held semi monthly, the social meetings, with papers on various timely topics have been interesting features. The club has taken up several questions of civic improvement, among these the maintenance of the public playground.

At the meeting of the Ancon Study Club on January 16, the new work of the study or American history was begun. In addition to this course, which will continue during the next three months, a half hour at the close of each meeting will be devoted to the study of popular astronomy, Martha Evans Martin's book, "The Friendly Stars," being the text book used.

Church Notes.

The Gatun Christian League will hold a musical at the Commission chapel on Wednesday evening, January 22, the proceeds of the entertainment to be devoted to the purchase of hymn books for the church. Those who will participate in the program are Mrs. Purdy Mrs. Farmer, Miss Palm and Miss Neville.

University of Illinois Graduates.

For the purpose of organizing a Canal Zone Chapter of the Alumni, you are requested to communicate your name and address to Mr. James Zetek, Ancon.

Lawn Tennis.

The Isthmian Tennis Association commenced the season of 1913 with a doubles tournament at Ancon on Sunday, January 12, with the following clubs represented: Ancon, Drs. Ross and Runyan; Tivoil, Fechtig and Edwards; Pacific, Poole and Nevius; Culebra, Goethals and Tupper; Empire, Pulsifer and Shropshire; Tenth Infantry, Lieuts. Patch and Swartz; Gatun, Rose and Wells; Cristobal, Hart and Farquarson.

SUMMARY.

Pacific.....	6	6
Tenth Infantry.....	0	2
Gatun.....	6	6
Tivoil.....	3	2
Pacific.....	11	0
Tivoil.....	9	6
Cristobal.....	2	0
Culebra.....	6	1
Empire.....	6	7
Ancon.....	3	5
Ancon.....	6	6
Culebra.....	3	4
Pacific.....	7	2
Ancon.....	5	6

Lost—Treasury check No. 105954, dated January 3, 1913, drawn for \$60, not endorsed. Finder please return to H. E. King, Empire, and receive reward.

Married.

ERDMAN-McCULLOUGH—On Friday, January 17, Miss Sarah W. McCullough of Empire, to Daniel J. Erdman of Empire, the Rev. A. A. Nellis officiating. Canal Zone residence, Empire

PERSONAL.

Col. H. F. Hodges returned from his annual leave on the *Panama* which arrived at Cristobal on January 21.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The moving picture schedule for week January 27 to February 1, is as follows: Monday, Gatun; Tuesday, Cristobal; Wednesday, Gorgona; Thursday, Empire; Friday, Culebra; Saturday, Corozal; Friday, Porto Bello.

COROZAL.

A new floor is being laid in the assembly hall and the bowling alleys are being refinished. The work will probably be completed this week.

CULEBRA.

The "smoker" previously mentioned has been postponed and will be held at the earliest possible date.

Gatun lost three games at duckpins on the local alleys on Saturday night, January 18, with the following scores:

	Gatun.		Culebra.	
Gardiner.....	79	84	66	Silvers..... 90 103 87
Carlson.....	75	96	84	Durand..... 93
Morrisey.....	72	75	83	Steele..... 94 85
Harper.....	82	81	66	Anderson..... 83 83
Barthe.....	75	91	79	Case..... 83 95 76
				Kiernan..... 87 95
				Kersey..... 86
				Brown..... 86

Totals. 383 427 378 443 453 430
The following high scores were made during the week: Steel, 107, 105, 109, 102; Brown, 120, 114, 103; Anderson, 101, 100; Grossberg, 104, 103, 106; Belchem, 105; Kiernan, 101; Durand, 106; Dougherty, 109; Leonard, 100, 101; Silvers, 102, 103; Case, 100, 104.

Moving picture dates with Gorgona have been exchanged, and pictures will be shown at Culebra on Saturday night, January 25.

The reading room adjacent to the poolroom has been completed, as has the barber shop and Mr. Ketchum, formerly employed at the old clubhouse, has been reemployed.

Dr. Devine of New York City will give a lecture on "Abolition of Poverty" in the schoolhouse on Friday evening, January 24. Admission free. A musical program will be given.

EMPIRE.

The gymnasium class has started and will meet twice weekly. On Monday night the class will meet directly after the First Aid class, all interested see Mr. Russell.

The men have all ready started training for the athletic meet to be held on February 22. The jumping pit has been put in shape. All those wishing to enter should come out for practice.

Mr. Russell took the boys of the boys department on a tramp to Cruces on Saturday January 18. Fifteen boys were in the party.

GORGONA.

Three hundred and fifty people attended the motion picture show Saturday evening.

The Gorgona track men are getting into shape for the meet at Empire on February 22. The practice nights are Mondays, Wednesdays, and Saturdays. A track team special diet club has been organized at the hotel so that the men can have proper food during training term.

A handball tournament has been organized.

A wrestling tournament will begin next week.

Members working at night are allowed to transfer their ticket for entertainments to an immediate member of the family. It will be necessary for a member using such ticket to show the regular membership ticket at the desk in order to secure an entertainment ticket.

A bowling tournament will be started in February. All wishing to join should see Messrs. Regan or Roper. A new supply of phonograph records has been secured.

High bowling scores during the week follow: Davis, 110, 107, 108, 102, 101; King, 113, 118, 104, 112, 101, 121, 109; Roper, 103; Dunlap, 104, 118, 107; Sims, 103, 122, 114, 100, 103; Regan, 111; Denst, 113, 100; Moyer, 108; Gibhardt, 100, 121, 105; Seeb, 103, 100; McCain, 105.

GATUN.

On Thursday evening, January 23, Dr. Edward T. Devine of New York City, will deliver a lecture on the "Abolition of Poverty." Senorita Cervera of Panama City will play several piano solos.

An order for new library books was sent to the States during the past week.

Five hundred members are now enrolled in the Gatun Y. M. C. A. This is the largest number enrolled at a single clubhouse since the work was started on the Isthmus.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Allianca.....	P. R. R. Tuesday.....	Jan. 21
Colon.....	P. R. R. Tuesday.....	Jan. 28
Advance.....	P. R. R. Monday.....	Feb. 3
Panama.....	P. R. R. Monday.....	Feb. 10
Allianca.....	P. R. R. Saturday.....	Feb. 15
Colon.....	P. R. R. Friday.....	Feb. 21
Advance.....	P. R. R. Friday.....	Feb. 28
Panama.....	P. R. R. Friday.....	Mar. 6
Allianca.....	P. R. R. Wednesday.....	Mar. 12
Colon.....	P. R. R. Tuesday.....	Mar. 18
Advance.....	P. R. R. Tuesday.....	Mar. 25
Panama.....	P. R. R. Monday.....	Mar. 31
Allianca.....	P. R. R. Saturday.....	Apr. 5
Colon.....	P. R. R. Saturday.....	Apr. 12
Advance.....	P. R. R. Saturday.....	Apr. 19
Panama.....	P. R. R. Friday.....	Apr. 26
Allianca.....	P. R. R. Thursday.....	May 1
Colon.....	P. R. R. Wednesday.....	May 7
Advance.....	P. R. R. Tuesday.....	May 13
Panama.....	P. R. R. Tuesday.....	May 20
Allianca.....	P. R. R. Monday.....	May 26

CRISTOBAL TO NEW YORK.

Panama.....	P. R. R. Tuesday.....	Jan. 28
Allianca.....	P. R. R. Sunday.....	Feb. 2
Colon.....	P. R. R. Sunday.....	Feb. 9
Advance.....	P. R. R. Saturday.....	Feb. 15
Panama.....	P. R. R. Saturday.....	Feb. 22
Allianca.....	P. R. R. Friday.....	Feb. 28
Colon.....	P. R. R. Saturday.....	Mar. 8
Advance.....	P. R. R. Wednesday.....	Mar. 12
Panama.....	P. R. R. Tuesday.....	Mar. 18
Allianca.....	P. R. R. Monday.....	Mar. 24
Colon.....	P. R. R. Sunday.....	Mar. 30
Advance.....	P. R. R. Monday.....	Apr. 7
Panama.....	P. R. R. Saturday.....	Apr. 12
Allianca.....	P. R. R. Friday.....	Apr. 18
Colon.....	P. R. R. Thursday.....	Apr. 24
Advance.....	P. R. R. Thursday.....	May 1
Panama.....	P. R. R. Wednesday.....	May 7
Allianca.....	P. R. R. Tuesday.....	May 13
Colon.....	P. R. R. Monday.....	May 19
Advance.....	P. R. R. Monday.....	May 26
Panama.....	P. R. R. Sunday.....	June 1
Allianca.....	P. R. R. Saturday.....	June 7

NEW YORK TO COLON.

Carrillo.....	U. F. C. Saturday.....	Jan. 18
Prinz Eitel Friedrich.....	H. A. Saturday.....	Jan. 18
Santa Marta.....	U. F. C. Wednesday.....	Jan. 22
Pastores.....	U. F. C. Saturday.....	Jan. 25
Prinz August Wilhelm.....	H. A. Saturday.....	Jan. 25
Metapan.....	U. F. C. Wednesday.....	Jan. 29

COLON TO NEW YORK.

Zacapa.....	U. F. C. Thursday.....	Jan. 23
Prinz Joachim.....	H. A. Tuesday.....	Jan. 28
Carrillo.....	U. F. C. Tuesday.....	Jan. 28
Almirante.....	U. F. C. Thursday.....	Jan. 30
Prinz Eitel Friedrich.....	H. A. Monday.....	Feb. 3
Carrillo.....	U. F. C. Tuesday.....	Feb. 4
Santa Marta.....	U. F. C. Thursday.....	Feb. 6
Prinz August Wilhelm.....	H. A. Tuesday.....	Feb. 11
Pastores.....	U. F. C. Tuesday.....	Feb. 11

NEW ORLEANS TO COLON.

Atenas.....	U. F. C. Saturday.....	Jan. 18
Heredia.....	U. F. C. Wednesday.....	Jan. 22
Turrialba.....	U. F. C. Saturday.....	Jan. 25
Prismina.....	U. F. C. Wednesday.....	Jan. 29
Abangarez.....	U. F. C. Saturday.....	Feb. 1

COLON TO NEW ORLEANS.

Abangarez.....	U. F. C. Thursday.....	Jan. 23
Cartago.....	U. F. C. Thursday.....	Jan. 23
Atenas.....	U. F. C. Thursday.....	Jan. 30
Heredia.....	U. F. C. Thursday.....	Jan. 30
Turrialba.....	U. F. C. Thursday.....	Feb. 6
Prismina.....	U. F. C. Thursday.....	Feb. 6

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers for New York, via Kingston and Santiago de Cuba, sail thus: the *Prins Joachim* and the *Prins August Wilhelm* on alternate Tuesdays at 10 a. m., and the *Prins Sigismund* and the *Prins Eitel Friedrich* on alternate Mondays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon and Barrios, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, JANUARY 29, 1913.

No. 23.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications,
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Bids for Transmission Line.

More time is required by foreign and some American manufacturers than has been given them to prepare bids on the material specified in Circular No. 752, materials and equipment for the Cristobal-Balboa electric transmission line, including steel track span bridges, copper wire, insulators, ground plates, and equipment for substations. The date of opening the bids has therefore been changed from January 30 to February 15.

Pulling Electric Cable in the Locks.

Electric cables for the control, power, and lighting systems of the locks will be carried in vitrified clay duct, which has already been placed at Gatun and Pedro Miguel Locks and is being placed at Miraflores. For the control and power systems 246 miles of lead covered cable are to be pulled through these ducts, 40 per cent of the total amount that was placed by the largest power company in the United States during the twenty years preceding 1908. In addition there are 112 miles of wire of miscellaneous sizes from No. 12 up to 00 B. & S. gage for the lighting system.

This work in the locks was begun in October and will be finished in June. On account of the large amount of cable to be handled the expedient of laying it from an electrically driven winch has been resorted to. Before the operation is begun the ducts are carefully cleaned. Then a lead wire is pulled through, and by this means a manila cable is drawn through the duct. The electric cable is attached to the rope, and the winch is set in motion. By this method it is possible to pull 900 foot lengths of No. 0000 B. & S. gage lead covered cable at one time, whereas the average length by other methods is about 300 feet. The outside diameter of this cable is a trifle more than 2 inches. In such a length the cable passes through two intermediate manholes, and is greased at three points to aid in reducing friction. The advantage of pulling the long sections at one

operation is that the making of two joints is saved, and this is a considerable economy. The winch used for the purpose is mounted upon trucks operated over the return tracks of the towing system. The cable is being placed directly below the floor of the operating tunnel, and therefore the pull by the winch is direct.

Highest Range Tower.

The highest of all the towers that will be used in the range light system of the canal is now being constructed at Gatun, where it rises above the lock walls to such height as to cause general comment. When completed it will stand 95 feet above the coping of the lock walls.

This is the rear tower of the Trinidad-Gatun range, the front tower being that which straddles the center approach wall at the south end. The site is upon the backfill near the north end of the south lock, west side, and as the material of the fill is not sufficiently stable to sustain the weight of the tower, the foundation is a caisson sunk to bed rock. This caisson is of reinforced concrete 18 feet external diameter, and 15-inch walls, and it was sunk to bed rock through the fill, a distance of 62 feet below the top of the lock wall.

The tower has an octagonal base with an inscribed diameter of 17 feet 2 inches. The conical section has an outside diameter of 13 feet 8 inches and from this it tapers to 8 feet 8 inches at the top; wall 7½ inches thick at bottom and 5 inches at top. The focal plane of the light will be 87 feet 10 inches above the lock wall. The tower will be equipped with a reinforced concrete spiral stairway from the bottom to the light.

Waterproofing Expansion Joints and Cracks.

As in the case of all underground structures of concrete, the operating tunnels of the locks show a tendency to leak. It is necessary to leave expansion joints in placing the concrete, and in addition to these the concrete forms expansion cracks in various places. These places were marked during the last rainy season, and during the present dry season the work of stopping them with some material that will prevent the leaking of water will be done. Experiments are now being conducted at Pedro Miguel to the end that a suitable material may be determined upon.

Road from Gamboa to Empire.

Work on a macadam highway from Gamboa toward Empire, on the east side of the Canal, has been begun by the convicts who were engaged until February 11 in the construction of the Canal Zone portion of the Empire-Chorrera road. The men are quartered in a stockade south of Tower R, on the relocated line of the Panama railroad, and are extending the road southward. The new highway will lie east of the railroad as far as the junction with the track along the east di-

version of the Canal. Here it will cross both railroad and diversion and, swinging to the west, will strike the Las Cascadas Plantation road about a thousand feet east of the Canal bank.

With the completion of this road, highway connection will be established on the east side of the Canal from the Chagres River, or the edge of Gatun Lake, to Panama. Such connection is made now to Gorgona, but all of the road north of Empire is on the west side of the Canal and is reached by the Empire suspension bridge over Culebra Cut, which will be removed when the Canal is ready for operation.

Installation of Fender Chain Machines.

Two sample machines for operating the chain fenders have been installed, and will be ready for test during the next fortnight. These machines have been placed in the east flight of locks at Gatun, and the chain has been stretched across the upper forebay. The test will determine what, if any, changes must be made in the manufacture of the 46 additional machines, required for all the locks.

Cardenas River Highway Bridge.

Plans are being prepared for extending the Cardenas River bridge of the highway between Corozal and Miraflores. The present opening of 30 feet between abutments has been inadequate during freshets, and as the abutments are not provided with flare walls the road was washed out twice during the past rainy season. An additional span about 20 feet long is to be constructed at the north end of the present span.

Fuel for Torpedo Boat Destroyers.

For supplying fuel oil to the torpedo boat destroyers of the Atlantic fleet at Colon the eight-inch pipe line of the Union Oil Company has been extended 500 feet beyond the Isthmian Canal Commission's tanks Nos. 28 and 29 at Mount Hope and connected with a four-inch pipe, with a 50-foot hose, at the berth of the seagoing suction dredge *Caribbean*. The berth is immediately south of the dry dock, along the French Canal. The oil pumped to the destroyers is of the same quality as that supplied to the Commission, and at the same price of \$1.10 per barrel of 42 gallons, with deductions at the rate of one per cent for each per cent of water in excess of two per cent. It is estimated that approximately 7,000 barrels of fuel oil will be supplied to the 19 destroyers and the tender *Dixie*.

Recruiting of Laborers.

A temporary shortage in the supply of common laborers for work on the canal and railroad has been overcome by the importation of negroes from Barbados. Ninety eight arrived on the *Trent* on January 19, and 300 more will be here on February 2. The recruiting of laborers for the Canal has been in

NOTES OF PROGRESS.

progress since 1904, and meanwhile it is estimated that practically as many have come to the Isthmus of their own initiative as have been imported. The importations of contract laborers are shown for each year in the following statement:

Country.	1904	1905	1906	1907	1908
Spain			1,181	5,291	1,750
Cuba			500		
Italy			909	1,082	
Greece				1,101	
France			19		
Armenia			14		
Tot'l Europ'an.			2,623	7,424	1,750
Fortune Island			361		
Barbados	404	3,095	6,510	3,242	2,592
Gau deloupe				2,039	
Martinique		2,733	585	2,224	
Jamaica		47			
Trinidad			1,079		
Curaco			23		
St. Kitts			933		
St. Lucia					
St. Vincent					
Grenada					
British Guiana					
Total West Indians	404	5,875	9,491	7,505	2,592
Costa Rica		244			
Colombia		1,077	416		
Panama		334	10	13	
Not Classified			69		
Grand total	404	7,540	12,609	14,942	4,342

Country.	1909	1910	1911	1912	Total
Spain					8,222
Cuba					500
Italy					1,941
Greece					1,101
France					19
Armenia					14
Total Europ'an.					11,797
Fortune Island					361
Barbados	3,605				19,448
Gau deloupe				14	2,053
Martinique					5,542
Jamaica					47
Trinidad		205		143	1,427
Curaco				23	
St. Kitts				9	942
St. Lucia				55	55
St. Vincent				296	296
Grenada				93	93
British Guiana				332	332
Total West Indians	3,605	205		942	30,619
Costa Rica					244
Colombia					1,493
Panama					357
Not Classified					69
Grand total	3,605	205		942	44,479

Gatun Dam Spillway.

The concrete work in the Spillway at Gatun Dam is over 95 per cent completed, 215,162 cubic yards, out of a total of 225,000 having been placed at the close of work on January

25. A statement of the amount laid each day last week, and of the total in place, follows:

DATE.	Concrete laid.	Hours worked.	No. mixers used.
January 20.....	Cu. Yds. 122	7.00	2
January 21.....	184	6.25	1
January 22.....	200	7.00	2
January 23.....	170	6.50	1
January 24.....	160	5.75	1
January 25.....	108	4.50	1
Total.....	944	37.00	13
Previously reported...	214,218		
Grand total.....	215,162		

Election of Red Cross Officers.

The annual election of officers for the Canal Zone Chapter, The American National Red Cross, resulted as follows: Chairman, Col. Carroll A. Devol; vice-chairman, Mr. Edw. Schildauer; secretary, Mr. A. B. Dickson; treasurer, Lieut.-Col. John L. Phillips; executive committeemen, Col. W. C. Gorgas, Maj. Chester Harding, Dr. A. J. Orenstein.

Delivery has been made on the Isthmus of the 120 cylindrical valve machines required for the locks; and of the 114 motors required for the rising stem valves.

CONCRETE WORK IN THE LOCKS.

Over 96 per cent of the total of 4,416,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on January 29, the amount in place being 4,268,226 cubic yards.

GATUN LOCKS.

Over 94 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on January 25 being 1,937,716 cubic yards, out of a total of 2,043,730. A statement of the amount placed in the locks each working day of the week ending January 25, and of the total, follows; and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers.	Concrete placed.	Hours worked.	No. of mixers.		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
January 20.....	1,276	21.28	4					1,276
January 21.....	1,378	22.96	4					1,378
January 22.....	1,466	24.44	4					1,466
January 23.....	1,392	23.20	4					1,392
January 24.....	1,502	25.04	4					1,502
January 25.....	1,396	23.28	4					1,396
Total.....	8,410	140.20	4					8,410
Previously reported								1,929,306
Grand total								1,937,716

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 907,165 cubic yards having been placed at the close of work on January 25. The record for each of the working days of last week, follows:

DATE.	2-cubic yard mixers.			1-cubic yard mixers.			Mixed by hand.	Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers.	Concrete placed.	Hours worked.	No. of mixers.			
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.
January 20.....	260	28.00	5						260
January 21.....	245	25.50	5						245
January 22.....	248	23.00	4						248
January 23.....	245	21.50	3						245
January 24.....	259	25.00	4						259
January 25.....	283	27.50	4						283
Totals.....	1,540	150.50	4 17						1,540
Previously reported									4,493
Grand total.....									4,493

MIRAFLORES LOCKS.

Over 94 per cent of the concrete for the system of two twin locks at Miraflores was in place January 25, the total amount on that date being 1,423,345 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.						Mixed by hand.	Large stone.	SPILLWAY. 1-cubic yard mixers.			Total.
	Concrete placed.	Hours worked.	No. of mixers.	Concrete placed.	Hours worked.	No. of mixers.	Concrete placed.	Hours worked.	No. of mixers.			Concrete placed.	Hours worked.	No. of mixers.	
	Cu. Yds.			Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.			Cu. Yds.
January 20.....	1,292	31.83	8	18	2.00	1	286	28.00	3			162	7.50	1	1,758
January 21.....	1,542	39.00	8	69	8.00	1	224	28.00	3			180	8.00	1	2,015
January 22.....	1,856	46.83	8	72	8.00	1	213	26.00	3			198	8.00	1	2,339
January 23.....	1,950	41.42	8	81	8.00	1	216	28.00	3			113	6.00	1	2,360
January 24.....	1,998	44.67	8	81	7.50	1	177	18.50	3			176	7.00	1	2,432
January 25.....	1,524	37.75	8	74	7.00	1	176	17.50	2			126	6.50	1	1,900
Totals.....	10,162	241.50	8	395	40.50	1	1,292	146.00	2.83			955	43.00	1	12,804
Previously reported												3,693			1,410,541
Grand totals.....												3,693			1,423,345

EXECUTIVE ORDER

To Amend the Executive Order Providing for the Inspection of Steam Vessels, Approved July 21, 1911.

By virtue of the authority vested in me, I hereby establish the following Order for the Canal Zone:

SECTION 1. Section 10 of the Executive Order entitled "Executive Order Providing for the Inspection of Steam Vessels," approved July 21, 1911, is hereby amended to read as follows:

SECTION 10. Before issuing an inspection certificate to any vessel, the Collector of Revenues shall demand and receive from the owner or master of such vessel the following compensation for inspection and examination made for the year, in addition to any fees for issuing enrollments and licenses now, or which may hereafter be, allowed by law:

For each steam vessel under 15 gross tons..... \$5.00

For each steam vessel over 15 gross tons and not exceeding 100 gross tons..... \$10.00

For each and every gross ton in excess of 100 gross tons..... \$.05

The fees herein provided for shall cover the cost of the certificate, as well as the cost of inspection and examination of the vessel, and shall be for the use and benefit of the Canal Zone Government.

SEC. 2. Section 18 of the above mentioned Executive Order is hereby amended so as to read as follows:

SECTION 18. Every vessel coming within the provisions of this Order shall be provided with such number of lifeboats, floats, rafts, life-preservers, line carrying projectiles and best means of propelling them, lights, drags, anchors, and with such other equipment, as, in the judgment of the Board of Local Inspectors, will best procure the safety of all persons on board such vessels in case of disaster. And every such vessel shall have the lifeboats required by this Order provided with suitable boat disengaging apparatus, so arranged as to allow such boats to be safely launched while such vessels are under speed, or otherwise, so as to allow such disengaging apparatus to be operated by one person, disengaging both ends of the boat simultaneously from the tackle by which it may be lowered to the water; and the Board of Local Inspectors shall determine the kind of lifeboats, floats, rafts, life-preservers, line carrying projectiles and means of propelling the same, lights, drags, anchors, and other equipment which are to be used on the vessel; and also the kind and capacity of the pumps for freeing the vessel from water in case of heavy leakage, the capacity of such pumps being suited to the navigation in which the vessel is employed.

SEC. 3. This Order shall take effect thirty days from this date.

WM. H. TAFT.

THE WHITE HOUSE,
January 13, 1913.

[No. 1680.]

Ordinances on Navigation of Canal and Operation of Motor Boats.

On December 16, 1912, an ordinance was enacted by the Isthmian Canal Commission,

which was approved by the Secretary of War on January 13, amending Rules 90 and 91 of the Rules for the Navigation of the Panama Canal and the approaches thereto, effective on February 12.

On December 16, 1912 the Commission also enacted an ordinance, which was approved by the Secretary of War on January 13, providing for the licensing of navigators of motor boats.

As these laws make important changes in the present laws they will be published in full in the next issue of THE CANAL RECORD.

Canal Zone Postal Savings Banks.

Postal Savings Bank transactions at the Canal Zone postoffice during December, 1912, were as follows:

NAME OF OFFICE.	Postal savings certificates issued.	Postal savings certificates paid.
Ancon.....	7,863.00	8,207.00
Balboa.....	9,366.00	7,566.00
Bas Obispo.....	964.00	91.00
Corozal.....	12,220.00	10,440.00
Cristobal.....	10,961.00	9,407.00
Culebra.....	8,193.00	7,652.00
Empire.....	4,175.00	6,172.00
Gatun.....	12,073.00	11,064.00
Gorgona.....	15,671.00	13,579.00
Las Cascadas.....	5,263.00	5,376.00
Matachin.....	937.00	700.00
Miraflores.....	4,431.00	3,122.00
Paraiso.....	7,959.00	5,682.00
Pedro Miguel.....	10,358.00	12,620.00
Cristobal, Sta. "A".....	1,290.00	605.00
Cristobal, Sta. "B".....	814.00	704.00
Total.....	\$113,538.00	\$102,987.00
Deposits on hand December 1, 1912.....	\$469,308.00	
Amount deposited in December.....	113,538.00	
Amount withdrawn in December.....		\$102,987.00
Balance on hand		479,859.00
	\$582,846.00	\$582,846.00

Family Quarters

Applications for family quarters on file December 31, were as follows:

DISTRICT.	List No. 1.	List No. 2.
Balboa.....	2 (1)	50 (5)
Ancon.....	7	83 (18)
Ancon Hospital.....		2
Corozal.....	2 (1)	63 (13)
Pedro Miguel.....	2	41 (8)
Culebra.....	2 (2)	39 (10)
Empire.....		110 (17)
Las Cascadas.....		45 (2)
Bas Obispo.....		25 (1)
Gorgona.....		64 (33)
Gatun.....		88 (2)
Cristobal.....	2 (1)	124 (6)
Toro Point.....		6
Proto Bello.....		10 (3)
Total.....	17 (5)	750 (118)

NOTE—The figures in parenthesis show the number of applications already occupying regular or non-housekeeping family quarters at stations other than those at which applications are filed.

Missing Men.

Anyone having information regarding the whereabouts of Ben Knox, who is supposed to be on the Isthmus, is requested to communicate with THE CANAL RECORD.

Anyone having information regarding the whereabouts of Dr. M. H. Lindenbaum, who is supposed to be practicing medicine on the Isthmus, is requested to communicate with the American Legation, Panama.

Anyone having information regarding the present whereabouts of Louis F. Fanovich, who was discharged from the service of the Commission on October 1, 1912, but who, it is understood, is still on the Isthmus, is requested to communicate with the office of the Chairman and Chief Engineer.

OFFICIAL CIRCULARS.

Approved Ratings and Rates of Pay For Silver Employees—Service Slips.

CULEBRA, C. Z., January 23, 1913.

CIRCULAR No. 299-Z-1:

When the service slip issued to a silver employee shows that he was his rated for any form of misconduct or unsatisfactory service, he is thereby debarred for a period of not less than three months from reemployment at the same rate of pay received when discharged.

H. F. HODGES,

Acting Chairman and Chief Engineer.

Signatures of Employees Authorized to Witness Pay Receipts or Time Voucher.

EMPIRE, C. Z., January 22, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

Promptly upon receipt of this circular, kindly forward to the Disbursing Officer at Empire ten (10) sets of autographic signatures of each and every responsible timekeeper or other employees in your department duly authorized by you to witness signatures upon pay receipts or time vouchers.

These should be made up in ten separate sheets, each sheet containing the signature of each and every timekeeper and other employee concerned, alphabetically arranged.

Effective February 1, 1913, no pay certificate or time voucher will be honored unless witnessed by some authorized employee whose signature has, prior to the date of witnessing, been forwarded to the Disbursing Officer in ten copies, as per the above. All changes among such authorized employees, caused by separation from the service or addition thereto, should be promptly reported to this office.

W. M. WOOD,

Disbursing Officer.

H. F. HODGES,

Acting Chairman and Chief Engineer.

Removal of Old Cards from Panama Railroad Cars that have been Emptied.

CULEBRA, C. Z., January 21, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

Some confusion has arisen through failure to remove old cards from P. R. cars that have been emptied. Please see that these cards are removed in the future as soon as the cars are empty.

H. F. HODGES, Acting Chairman.

Proposals for Furnishing Plants and Seeds.

OFFICE OF DEPOT QUARTERMASTER,

MOUNT HOPE, C. Z., January 6, 1913.

Sealed proposals will be received at the office of the Depot Quartermaster, Mount Hope, until three o'clock p. m., February 1, 1913, when they will be opened in the presence of attending bidders, for furnishing, in cars at any station on the Panama railroad, 1,200 coconuts, 1,000 sugar cane plants and 5,000 white yam heads for planting; 1,000 plantain plants, one bushel seed sweet potatoes, two bushels Kafir corn seed, and two bushels sorghum cane seed. Best quality only is desired and samples must be submitted. Proposals should show unit prices. Coconuts are to be supplied at earliest practicable date and the other items to be delivered during April, 1913. The right is reserved to reject any or all bids, or any combination of bids. Envelopes must be plainly marked; "Proposals for furnishing plants and seeds, to be opened February 1, 1913," and addressed to

C. NIXON,

Purchasing Agent on the Isthmus.

Misdirected Letters.

ANCON, C. Z., January 29, 1913.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Austin, P.	Julian, Nell (pkg.)
Baldwin, Earnest	Martin, Fred C.
Bartholomew, Miss	McHugh, Frank (2)
Bloch, Henry	O'Sullivan, Vernon
Cady, Leo M.	Reed, L. H.
Campbell, Chas.	Rose, Charles
Corning, Capt. F. (photo.)	Rouse, Reginald N. (2)
Davis, Geo. W.	Schneider, Rev. G. N.
Dempsey, J. J.	Stress, Fred J.
Duer, Joseph	Taylor, Benj.
Fisher, Ernest	Thomas, John
Hartman, Clifford	Waters, Frank
Binselman, A. (photo.)	Williams, Samuel Lawrence
Jackson, Mrs. W. T.	Work, L.
Jackson, Byron P.	Zachary, W. R.
Jorgensen, E. L.	

LETTERS UNCALLED FOR JANUARY 29, 1913.

Auer, Mrs. Geo. H. (pkg.)	Jones, Wm. A.
Belle, Samuel	Keeling, Jas. R.
Bevington, Harry F.	Koch, J.
Chapin, Frank	Lehman, Isaac (2)
Cleary, Walter	Nelson, C. H. (pkg.)
Curtiss, Clarence	Ross, J. Dunbar
Davis, Mrs. W. L.	Sisk, Sam B.
De Vore, Mrs. L. H.	Smith, J. W. (pkg.)
Fleming, Roy	Snediker, Miss Grace
Gallagher, J. R.	Sullivan, Bernard
Groosberg, A. S.	Teran, Oscar (pkg.)
Guardig, T.	Willie, Mrs. Winnie
Heil, Wm.	Work, Leonard
Hoffman, Warren	Wunsch, E. H.
Jones, Arthur, A.	

COALING PLANTS

Proposed Method of Handling Coal at Atlantic and Pacific Entrances.

Speed in handling coal with the least possible amount of breakage is the main requirement of the coaling plants to be established at the Atlantic and Pacific entrances to the Canal, at Cristobal and Balboa respectively. Specifications for the machinery of the two plants have been completed and within a few weeks advertisement will be made for bids.

GENERAL PLANS.

It is planned to have a coal storage basin at Cristobal with a capacity of two hundred and ninety thousand tons, and one at Balboa with a capacity of one hundred and sixty thousand tons. In each place the storage will be within a large basin made of reinforced concrete, in which approximately half of the coal will be stored under water for use in time of war, and the other half above water to be added to and taken from continually for the ordinary uses of commercial and Government vessels. It is also planned, if the policy should be approved, to be able to lease parts of the storage basin to such private coaling companies as may wish to maintain their own coal stores on the Isthmus; but in such cases all of the handling will be done by the Government plant, a suitable charge being made for the service.

The specifications are not hard and fast, but merely establish certain general methods and standards, leaving it to manufacturers to devise suitable machines. One of the limiting conditions is that the Government shall build the substructure or storage bin and place upon the walls such tracks as cranes and other moveable machines may require. This substructure will cost more than the coal handling plant. The details will not be decided upon until the bids for the handling plant have been canvassed, because each plan will require its own special substructure, and one of the points considered in awarding the contract will be the cost of the substructure required under each plan.

In general, however, the specifications call for cranes that will unload coal from ships, a conveying system that will transfer it to bridges that will span the storage basin, and dump it at any place desired; and such a system of buckets operating upon these bridges as will make it possible to lift coal from the storage basin, and by means of conveyors raise it to loading machines that will dump it into colliers or lighters. The Cristobal plant must be capable of unloading 1,000 tons and loading 2,000 tons of coal each hour, and the Balboa plant 500 and 1,000.

In the ordinary operation of each of the plants, vessels requiring bunker coal will not go alongside the wharves of the plants to receive such coal, but will be coaled while lying in the stream from barges laid alongside, these barges having been loaded by means of the reloaders forming part of the specified handling machinery for each plant. The plants are to be capable, however, of rapidly loading colliers laid alongside the wharves by means of the above mentioned reloaders, the high capacities specified for outward bound coal being fixed with a view to re-

quiring colliers to remain at the plants for the shortest time practicable.

ATLANTIC ENTRANCE PLANT.

The coaling plant at the Atlantic entrance will be situated on the north end of the island formed by the old French canal, the American canal, and the Mindi River. It will be reached from the mainland by means of a bridge to be built by the Panama railroad over the French canal south of the dry dock shops. The storage basin will be opposite Dock No. 13 at Mount Hope, and it will be 1,000 feet long and 250 feet wide. The bottom of the basin will be 19 feet below mean tide, and the elevation of the decks of the wharves 10 feet above mean tide. There will be 41 feet depth of water alongside the wharves. The wharves will be founded upon steel cylinders filled with reinforced concrete resting upon hard rock. The maximum tidal oscillation in Limon Bay is 2.65 feet.

For this type of storage basin, at least two layouts of coaling plant are feasible; the first being that in which the loading and unloading wharves occupy opposite sides of the basin parallel with one another, with the coal piles between them, and the second that in which the unloading wharf will be at right angles to the loading wharf. The normal capacity will be 240,000 tons, capable of increase to 290,000 tons by piling coal to ten feet additional height.

PACIFIC ENTRANCE.

The coaling plant at the Pacific entrance will be on the quay wall south of the entrance to the large dry dock. The size of the basin will be 500 feet long and 250 feet wide for one design of plant, and the same length and 340 feet wide for a second design. The extreme tidal difference here is 21.8 feet. As at the Atlantic entrance, the loading wharf will be founded upon concrete cylinders resting upon hard rock; the unloading wharf will be gravity section concrete wall resting on rock. The normal capacity of the Balboa plant will be 135,000 tons, capable of increase to 160,000 tons, by piling coal ten feet above normal height.

The layout is somewhat different from that at the Atlantic entrance, although the methods of handling the coal will be similar. The unloading wharf will be situated at the outer end of the dry dock slip, while the line of the loading wharf makes an angle of about 45 degrees with that of the unloading wharf, running out toward the canal prism from the end of the unloading wharf.

In the first plan a basin 500 feet long and 250 feet wide is provided for, with bottom at 18 feet below mean tide, and top of wharf at 16½ feet above mean tide. The capacity of this plant must be not less than 500 tons of coal an hour to be unloaded and 1,000 tons per hour to be loaded aboard colliers or barges. Two unloaders will be required with conveyors, and two single stocking reclaiming bridges. Two reloaders will also be required. The operation of this plant is essentially the same as that for the Atlantic entrance.

An alternate plan for the Balboa plant provides for the same location of the wharves but for a basin 500 feet long and 340 feet wide. The unloaders are the same as in other plans, but instead of dumping into conveyors they will discharge by means of the cantilever end directly into the basin, and large cantilever cranes will then pick up the coal and deposit it at any desired points in the storage basin.

For reclaiming, these same cranes will pick up the coal and trolley it into their towers where it will be dumped into cars or other conveyors, whence it will be carried away from the basin, along the front of the reloading wharf to the reloaders.

The purpose of this second plan is to make use of four berm cranes now used in the placing of concrete at Miraflores locks, and thus save the expense of the stocking and reclaiming bridges. Whether they will be used depends upon the cost and general desirability of this plant compared with one having entirely new handling machinery.

UNITS OF THE PLANTS.

The following paragraphs refer particularly to the Cristobal plant, but with certain modifications, as indicated above, apply also to the Balboa plant.

UNLOADERS

The unloading operation will consist of taking coal from a collier, and depositing it at any desired place in the bin or basin. For this purpose unloading towers, a conveying system that will carry the coal lengthwise of the storage bin along the wharf, bridges spanning the basin, and a conveying system upon these bridges, which will take the coal from the first conveyors and dump it wherever required, are specified.

Four unloading towers of not less than 250 tons capacity per hour each, making a total capacity of one thousand tons an hour, form the first unit of the unloading system. These towers must be capable of four operations: (1) Mining coal from a vessel and depositing it into a hopper built within the tower, whence it may be delivered by chutes to the conveying system, or to Panama railroad cars running on a track beneath the tower. (2) Mining coal from a vessel and depositing it by the bucket or shovel into the storage pile behind the tower. (3) Mining coal from storage pile behind the tower and depositing it in the hopper in the tower. (4) Mining coal from the storage pile behind the tower and depositing it by the bucket or shovel aboard vessels.

Each tower will travel on two parallel pairs of rails between which, at the level of the wharf deck, there shall run a railroad track so located that cars may be run beneath the unloading tower and receive coal from its hopper. The speed of travel in either direction must be not less than 50 feet per minute against a wind pressure of 10 pounds per square foot. The track travel must be by motors or engines within each tower, and cable drive will not be acceptable.

The bucket or shovel by means of which the tower will mine coal from the colliers will have a capacity of 100 cubic feet, liquid full. This size is specified because, although many colliers will have large hatches equivalent to those of the latest naval type, a considerable proportion of the coal will be carried to the Isthmus in vessels in which a larger bucket could not be used. Larger buckets may be offered, however, provided small buckets are also supplied and a rapid means of making the change from one to the other is provided.

Each tower will be fitted with a lifting or folding boom on the water side and with a cantilever on the storage basin side. The cantilever may be moveable if necessary to permit the passage of the reclaiming bridges. In any case the track for the trolley of the bucket shall be horizontal and continuous, between the extreme ends of boom

and cantilever, when both are in a horizontal position, and the passage of the trolley over the hinge joints shall be made easily and without shock. Suitable buffers will be fitted at each end of the trolley runway. The distances through which the trolley or bucket will be capable of operation are as follows: Maximum height above wharf level, Balboa and Cristobal, 60 feet; maximum depth for reclaiming coal from ships below wharf level, Cristobal, 30 feet, Balboa, 45 feet; maximum horizontal travel of bucket on water side beyond center line of tower legs next to water, Cristobal and Balboa, 60 feet; maximum horizontal travel of bucket on land side, beyond nearest wall of coal basin, Cristobal and Balboa, 35 feet; maximum depth below wharf level for reclaiming coal from storage on land side at Cristobal, 29 feet; maximum depth below wharf level for reclaiming coal from storage on land side at Balboa, 34½ feet.

In addition to these operations the towers will be able to dredge the bottom of the slip in front of the unloading wharf 51 feet below wharf level at Cristobal, and 61½ feet at Balboa.

The hopper within the unloading towers will have a capacity of not less than 50 tons of coal. The boom on the water side will lift or fold by movement in a vertical plane in such fashion that when fully housed no part of it shall project more than four feet beyond the concrete face of the wharf, nor descend lower than the top of the hopper.

CONVEYORS.

The conveying system must provide for the transfer of coal from the unloading towers along the wharf to any point at which the bridges may be spanning the bin, and the transfer along the bridges to any point desired, where it may be tripped into the storage basin. It must have a sufficient capacity to handle the maximum amount of coal delivered by the unloading towers. It may consist of either cars of trains propelled by electricity or cable, belts or continuous conveyors of similar construction, or any other approved, tried out, and guaranteed means of doing the work, due regard being had to the basic requirement that breakage of coal in handling must be reduced to a minimum.

At the Cristobal plant the conveying system must be capable of performing any of the eight operations described below. At the Balboa plant the requirements are similar, but are necessarily modified by reason of the smaller size of that plant and the use of the berm cranes referred to above: (1) Receiving coal from a single unloading tower or group of towers located anywhere on the unloading wharf, as for the unloading of a single vessel, and transporting it to any part of the storage pile. (2) Receiving coal from a single unloading tower, or group of towers located anywhere on the unloading wharf, as for the unloading of a single vessel, transporting it direct to the reloaders, which may be spaced at any intervals along the reloading wharf, and delivering it to one only or distributing it among any number of reloaders, the proportionate distribution among the reloaders in action being of as wide a range, within the individual capacities of the reloaders, as practicable without undue complication and cost. It will be possible, in any event, to distribute the coal substantially equally among any number of reloaders in action. (3) Receiving

coal from a single unloading tower or two towers, located anywhere on the unloading wharf, as for the unloading of a single vessel, and transporting it direct to the wharf bunker, the capacity of the conveying system leading to the wharf bunker being sufficiently great to handle the maximum discharge from two unloading towers. (4) Receiving coal from a single unloading tower, or a group of towers, located anywhere on the unloading wharf, as for the unloading of a single vessel, and transporting it to storage at any part of the storage pile, while at the same time coal is being reclaimed from any other part of the storage pile, and being conveyed to the reloaders or to the wharf bunker. (5) Receiving coal simultaneously from two vessels located anywhere along the unloading wharf, one, two, or three unloaders being at work on one vessel, and transporting it from both vessels to the same part of the storage pile, to the reloaders direct or to the wharf bunker direct, within the capacity of the conveyors supplying the bunker. If coal from both vessels is being transported to the storage pile, it shall be possible simultaneously to reclaim coal from any other part of the storage pile by means of the remaining bridge or bridges, and transport it to the reloaders direct or to the wharf bunker direct. (6) Receiving coal simultaneously from two vessels, located anywhere along the unloading wharf, one, two, or three towers being at work on one vessel, and simultaneously transporting the coal from any one of the two vessels to any point in the storage pile, and from the other vessel to any other point in the storage pile, or to the reloaders direct, or to the wharf bunker direct. (7) Receiving coal reclaimed from the storage pile by one or more bridges up to the full number, spaced at any intervals along the storage pile, and transporting it to the reloaders or to the wharf bunker. (8) Taking coal from any point in the storage pile and depositing it at any other point in the storage pile by use of the bridges.

BRIDGES.

Two duplex or four single bridges are required in the proposed plan for the Cristobal plant. The former are fitted with two shovels or buckets, and the latter only one each. These bridges will span the coal storage basin, over the coal piles, and move along the walls longitudinally of the basin, so that they can cover any point in the basin. Upon them will be mounted the conveyors, that will carry coal from the conveyors upon the walls to any point desired within the basin; and the shovels or buckets that will mine coal from the basin and carry it to the conveyors, which will transfer it to the wharf bunker and to the machines for loading it upon colliers or barges.

RELOADERS.

The reloaders will be machines moving longitudinally along the wharf at which colliers and barges will tie up to receive coal. They will move by their own power, but not by cable. They will receive coal from the conveying system and deliver it to the vessels, and, to this end, will be fitted with the following essential parts: (a) A hopper or hoppers for the reception of coal from the conveying system of sufficient size to regulate the flow of coal; (b) a conveying system to transfer coal to the discharging end of the reloader; and (c) an adjustable arm or boom equipped with a telescopic chute to deliver coal with a minimum of breakage. This boom

will house in sufficiently to lie entirely behind the plane of the front wall of the wharf when the reloader is not in use, in order that the reloader may be moved past shrouds, upperworks, etc., of vessels lying at the reloading wharf. The extreme conditions of discharge that must be met by each reloader are as follows:

(1) For vessels having cargo holds 70 feet wide athwartship, fore and aft center line of vessel assumed to be fifty feet from face of wharf; cargo hatches not less than 10 feet wide by 30 feet long; long dimension athwartship; hatch coaming 35 feet above deck of wharf and nearest side 35 feet horizontally from face of wharf; handrail 40 feet above deck of wharf and nearest side 3 feet distant from face of wharf; bottom of cargo hold 45 feet below hatch coaming; hatches 25 feet center to center fore and aft. (2) For vessels similar to the above, light draft at extreme low water; extreme depth of cargo hold below deck of wharf, at Cristobal 25 feet at Balboa 40 feet. (3) For coal barges 30 feet wide, light draft at extreme low water; deck of barges 5 feet below deck of wharf at Cristobal, and 20 feet at Balboa.

Each reloader at each plant shall be able to perform the following functions at maximum rate: (a) Filling the holds of vessels having the characteristics outlined in (1) and (2). (b) loading flat deck barges as indicated in (3); (c) filling holds of smaller vessels and loading larger flat deck barges through all gradations of size of each class. The foregoing operations shall be performed with minimum of trimming by means outside the reloader itself. Under (c) vessels having hatches as small as 12 feet square shall be readily loaded. It shall not be necessary to breast off vessels smaller than described in (1) and (2) in order to bring their hatches under the point of discharge from the reloaders, but all adjustments to suit the particular vessel or barge to be loaded shall be by means within the reloader itself.

Red Cross Finances.

A statement of the finances of the Canal Zone Chapter American National Red Cross for the month of December, follows:

RECEIPTS.	
December 1, On hand	\$1,886.42
December 11, Sale of Christmas Seals	70.00
December 20, Sale of Christmas Seals	31.00
December 24, Interest on money in bank, June to to November, inclusive	21.20
December 24, Sale of Christmas Seals	14.00
December 31, Membership dues ..	101.00
Total receipts	\$2,123.62
DISBURSEMENTS.	
December 12, Payment for meals furnished at Cristobal Hotel	\$18.00
December 12, Printing ballots	4.59
December 13, Payment of rent for destitute family at Colon	11.00
December 24, Cablegram to New York	3.55
December 27, Relief of American woman from Chiriqui, Rep. of Panama	30.00
Total disbursements	\$67.14
December 31, Balance on hand	\$2,056.48
JOHN L. PHILLIPS, Treasurer.	
Approved: C. A. DEVOL, Chairman.	

FOUND—A purse, in Culebra, Monday, January 20. owner can obtain same by applying at the dispensary.

THE WOMEN'S CLUBS.

Last Meeting of Canal Zone Federation.

The sixth annual meeting of the Canal Zone Federation of Women's Clubs was held at the Hotel Tivoli on Saturday, January 25, being attended by nearly two hundred club women and their friends. In view of the fact that the next general meeting of the Federation would not occur until January, 1914, and the forthcoming changes in the canal force would remove the majority of the members from the Isthmus, the convention ordered that this should be the last annual meeting of the Federation and that at the close of the club year, April, 1913, the organization should go out of existence. This action was taken in accordance with the recommendation of the executive board made at its meeting in November, 1912. At the business session, therefore, which convened at 9 o'clock, the questions to be decided upon were the disposition of the Federation property, the publication of the history which will place the work of the Federation in permanent form, and the possibility of carrying on for one more year the work of educating the blind boy now in Perkins Institute, Boston, as the ward of the Federation.

In her welcome to the delegates, Mrs. Henry Ropes Trask, representing the members at large of the Federation, reminded the club women that one justification of the organization had been the work of placing this boy in school. In her response to the greeting, the President told of a busy year; of visits from club women from organizations in the United States, and of their good will and interest. The librarian, Mrs. M. E. Smith, of Empire, reported that the juvenile library of 250 books is now at Cristobal. The pictures are in use in the Empire school and have been much enjoyed by the pupils. They have been exhibited in the public school in Gorgona and have also been exhibited by several of the federated clubs. In February, 1912, they were lent to the Ancon Study Club. The chairman of the Federation pins committee, reported all the pins sold, and a letter was read from the firm which makes the pins stating that they will continue to sell them in lots of ten for \$2.50 each, in smaller orders the price will be \$3.50 each. Mrs. J. H. Westberg, reported that the box of individual gifts for the inmates of the leper asylum at Palo Seco had been received at the asylum on December 23, and read a letter of thanks and appreciation from the superintendent of the asylum. In her report, the chairman of the history committee, Mrs. Carl H. Elliott, recommended the printing of the history. This committee was retained, its number being increased by the addition of two more members, and was authorized to publish the book in time for distribution at or before the last meeting of the executive board which will be held in April.

The reports of the club presidents showed a weakening of club work, which has been foreseen and which is inevitable in the face of the approaching end of the canal construction and the disbanding of the present force. Nevertheless, good philanthropic work has been carried on by the Empire Women's Club, the Gatun Club reported interesting meetings, and the Cristobal Woman's Club maintains its regular department work with success.

As chairman of a special committee on the Federation library, Mrs. Elliott stated that the Isthmian Sunday School Association

would be glad to receive the books for library extension work among the federated Sunday schools. The transfer of the library was ordered by the convention and the books will be turned over to the representatives of the association within a short time. A committee was appointed to decide upon the disposition of the pictures and the five books on art belonging to this collection. These pictures will however remain in the Federation until the close of the club year.

By an enthusiastic and unanimous vote, the Federation banner was given into the hands of the corresponding secretary to be forwarded to Mrs. Lorin C. Collins as a gift from the Federation. Mrs. Collins was the president of the Federation in its early days and placed the organization on the working basis by which it has been enabled to carry out club effort under its peculiar conditions. The banner is made of heavy green silk rep, ornamented with gold lettering and finished with fringe and tassels of gold. It was the gift of Miss Ferriss of New York in 1910. The gavel, one of three presented by the Superintendent of the Panama railroad in 1909 was given to the President, Miss J. Macklin Beattie, in accordance with the tradition established in the same year. At 12 o'clock, the meeting adjourned for the luncheon period.

At 2.30 o'clock an audience of two hundred was gathered in the ballroom for the afternoon session. The room had been arranged for an auditorium; at the back of the hall hung the Federation banner, and potted plants and ferns were ranged on either side of the chairs of the officers. It had been the object of the Federation to rally the club women who were members of the organizations in the beginning of the work, for this last meeting, and when a call was made for these women to stand it was found that there were 40 present. Other guests were the American Minister and Mrs. Dodge, the Hon. and Mrs. M. H. Thatcher, the Hon. Peter M. Speer, Member of Congress from Pennsylvania and Mrs. Speer, and Mrs. Nelly Peters Black, member of the executive board of the Georgia State Federation.

The program in full was as follows:

Piano duets:

- (a) Triumphal March, Grieg.
- (b) Salutation, Moskowski.

Mrs. Frank Ullrich and Miss Dorothy Leyland.

Communications—Letter of greeting from Mrs. Lorin C. Collins, read by the recording secretary.

Vocal solo, The Shadow Song from the opera of Dinora, Miss Loraine Foster.

At the piano Professor Garay, director of the National Conservatory of Music, Panama.

Address, The Philanthropic Outlook in Panama, Dr. Cueva Garcia.

Violin Solo:

- (a) Salut D'Amour, Elgar.
- (b) Perpetua mobile, Bohm.

Miss Dorothy Leyland.

Address—"The Abolition of Poverty," Dr. Edward T. Devine.

Greeting from the Georgia State Federation, Mrs. Nellie Peters Black, member of the Executive Board.

Chorus:

- (a) The Merry Lark, Gounod.
- (b) Kuessen will ich, Abt.
- (c) Huete dich, Genser.

Cecilian Chorus, Cristobal Woman's Club.

An informal reception followed, refreshments being served.

The arrangements for the day were in the hands of various committees acting under Mrs. Thomas Edwin Brown, Jr., chairman of the committee on arrangements. Of these subcommittees, Mrs. Fredrick Mears of Cristobal was chairman of the program and music and Mrs. Trask of Culebra chairman of the social committee. This committee had as assistants, Mrs. Mears and four presidents of the original federation clubs; Mrs. J. C. Barnett of Paraiso, Mrs. Frank Morrison of Gorgona; Mrs. W. H. Stoddard of Gatun and Mrs. Frank Roberts of Pedro Miguel.

An unannounced number of the program was a report made by the corresponding secretary of the progress of the blind boy in his first year of school. This being the last opportunity for concerted work of the Canal Zone club women, the appeal was made for donations toward a fund for one more year of schooling for James. A generous response was made by many present so that the Federation feels that a sum sufficient to carry on this work for one more year is assured.

The officers of the organization will carry over until April, and any communications may be addressed as formerly to the corresponding secretary or to the president.

Isthmian Sunday School Association.

The annual meeting of the Isthmian Sunday School Association was held in the Commission chapel, Gorgona on Sunday, January 12, beginning at 2.30 p. m. Twelve Sunday schools were represented by delegates, the total number present being 51 and there were 21 visitors from the various schools.

The Cristobal school has donated money to the Jacob Riis Settlement in New York, to the St. Bernado Home in England, and to the Sailors' Bethel in Massachusetts. Gorgona has assisted a needy family and sent money toward the relief of a theological student. Gatun, recently reorganized and brought up in efficiency, endeavored in its Christmas entertainment to emphasize the religious meaning of the festival. The Las Cascadas school presented the patients in the government asylum for lepers at Palo Seco with a graphophone for Christmas. Several of the schools observe mission Sunday once a month the offering being devoted to missions, and several support scholarships in the Methodist school in Panama. The superintendent of the Culebra school described the souvenir booklet presented by the school at Christmas. This booklet contains photographs of the chapel and of the teaching staff, the names of the scholars and teachers, the history of the Sunday school since its organization and the statistics at the close of the year 1912.

A letter was read from Mrs. Carl H. Elliott, chairman of a special committee for the Canal Zone Federation of Women's Clubs offering the Federation library of 250 books to the Association for library extension work. The offer was accepted, and a committee will be formed in the Association for the handling of this work.

The officers elected for the ensuing year are: President, the Rev. A. A. Nellis of Culebra; vice-president, W. H. Kromer of Cristobal;

treasurer, J. M. Weaver of Cristobal; secretary, W. M. Windes of Gatun.

Following are the statistics of the schools federated in the Isthmian Sunday School Association: Total number of children enrolled, 663; total number of adults, 193; number in the Home Department (Culebra only), 17; total number in the Cradle Roll, 116; total enrollment for the Association, 1,167; average attendance for the past quarter for the entire number of schools, 654. These numbers include a Sunday school at Porto Bello which has an enrollment of 20.

The next meeting of the Association will be held at Gorgona on Sunday, April 13.

Canal Zone Rifle Club.

At the annual meeting of the Canal Zone Rifle Club on January 12 at Pedro Miguel, the following officers were elected: President, F. W. Walraven; vice-president, J. N. Haynes; secretary, G. C. Ferris; treasurer, A. K. Evans; executive officer, W. L. Greene.

The reports of the officers of the past year showed that more shooting than ever before was done by the members, because of the club's having a range at Pedro Miguel, and 76 per cent of its members qualified under Class C, War Department regulations.

After the meeting, the fifth shoot for the Garlington medal was held, the winner being G. C. Ferris, with a score of 86.

Any white American citizen is entitled to membership in the club. Full details may be secured from the secretary, whose post office is Pedro Miguel. The new model Springfield is used by the club exclusively.

The Canal Zone Rifle Club held an informal match shoot with the Marines at the Gamboa rifle range on Sunday, January 19, in which the Marines were the victors. The best score of the match was made by Lieutenant Smythe, U. S. M. C., who made 49 at 200 yards. McLellan of the Rifle Club also made a good score at the same range, 48. The scores follow:

U. S. Marines.	200 yds.	300 yds.	600 yds.	Total.
Lieut. Smythe.....	49	46	46	141
Myers.....	39	43	47	129
Piper.....	35	45	45	125
Miskell.....	38	42	43	123
Ellis.....	40	38	44	122
Francis.....	36	42	40	118

Total..... 758

C. Z. Rifle Club.

McLellan.....	48	44	46	138
Ferris.....	46	43	44	133
Kennedy.....	38	46	37	121
Blaisdell.....	37	41	43	121
Hutton.....	41	36	42	119
Haynes.....	36	42	40	118

Total..... 750

PERSONAL.

Capt. Charles W. Barber and Mrs. Barber returned from leave in the United States, on the *Panama*, arriving January 21.

Obituary

Harold Wood, an employe of the Atlantic Division at Porto Bello, died on January 14 while enroute to hospital. He was injured by a falling dipper door on a steamshovel. He was 22 years of age, single, and had been on the Isthmus seven years, coming here from Chicago. He is survived by his father, Geo. W. Wood, living at Gatun.

LOST—On Sunday afternoon, January 19, at Las Cascadas or Bas Obispo, or passenger train No. 26, a lady's gold chain and locket. The locket is heart-shaped, engraved with the initials "L. M. P.," and contains a photograph. A suitable reward will be paid if returned to the owner or left at the Las Cascadas police station.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

Moving picture schedule for the week February 3 to 8, is as follows: Monday, Cristobal; Tuesday, Gorgona; Wednesday, Gatun; Thursday, Culebra; Friday, Corozal, Saturday, Empire; Friday, Porto Bello.

Lunches were served to the members of the First Division of the Atlantic Fleet on the special trains which transported the men across the Isthmus the first five days of last week; about 4,300 men were served. Lunches will be served this week to about 2,600 men, comprising the Third Division of the fleet.

COROZAL.

The floor of the assembly hall of the Corozal Y. M. C. A., will be completed this week in time for the regular weekly picture show. The lecture by Professor Devine of Colombia University, which was to have been given on Sunday night, was postponed on account of the repairs to the floor.

Mr. Burnsee of Cristobal played checkers with 18 different men, winning 64, losing 5, and drawing 4 games out of 73 played.

GAMES PLAYED.

Won by
Mr. Burnsee. Opponents. Draw

Haggarty.....	1	1	0	0
Zane.....	3	0	0	0
Morrison.....	2	0	0	0
Martin.....	6	0	0	0
Collings.....	3	0	0	0
Roberts.....	5	0	0	0
Fields.....	6	0	0	0
Reinwater.....	8	0	0	0
McCann.....	4	0	0	0
Consider.....	2	1	0	0
Gartrell.....	3	2	0	2
Owens.....	5	0	0	1
Haus.....	5	1	0	0
Hughes.....	3	0	0	0
Sherrard.....	3	0	0	0
Hamlin.....	2	0	0	0
Molineaux.....	1	0	0	0
Dwelle.....	2	0	0	0

CULEBRA.

The high scores in duckpins for the week are as follows: Case, 100; Brown, 110; Warner, 103; Steele, 100; Bechlem, 102; Silvers, 114; Anderson, 110; Durand, 115, 107, 102; Palmer, 102.

EMPIRE.

The "smoker" held Thursday evening, January 23, was attended by 250 men. The program consisted of music by the Tenth Infantry Orchestra; Butts' Manual drill by a squad of Tenth Infantrymen; solos, by Messrs. Case, Ross, Mosher; Duet by Mosher brothers; Reading by Mr. Fenstermacher; Mandolin trio, Mr. Ramsay, Mr. Arbuckle and Mr. Howard Culebra. With the refreshments that were served were home-made cakes donated by the Empire ladies.

Saturday evening, January 25, the Corozal duckpin bowling team lost two out of three games to the Empire team. The scores were as follows:

Empire.....	429	410	430
Corozal.....	396	445	420

The jumping pit in the rear of the building has been put in condition; all those intending to enter the track meet on February 22 may use this pit.

GORGONA.

A handball tournament opened Monday night, January 27. Twelve men have entered, and special prizes will be given.

The Empire duckpin team bowled at Gorgona on Saturday night, January 25. Results follow:

Empire.	Gorgona.
Lowande... 85 72 85	Dunlap.... 81 89 82
Gurd..... 87 95 89	Sims..... 107 85 89
Sawtell.... 89 76 82	Moyer.... 90 83 ..
Gustafson.. 87 92 82	Davis.... 108 92 81
Rodeghiero. 88 92 86	King..... 94 83 89
	Gebhart.... 88

Totals... 436 420 424 480 432 429

Monday evening the Gorgona people were entertained by the orchestra from the steamship *Prins Joachim*. Three hundred people attended.

The Gorgona Chorus will give a concert in February.

GATUN.

The present personnel of the Spanish classes under Professor Gomez, new courses for which started on January 24, is as follows: *Ladies class*—Mrs. Waid, Mrs. Parneter, Mrs. Weidner. *Advanced class*—Dr. Farmer, Mr. Porter, Mr. Waid, Mr. Valleley, Mr. Duckworth. *Intermediate class*—W. A. Roberts, W. S. Golden, O. E. Alyea, A. N. Margenson, Chas. E. Mead. *Primary class*—W. H. Brown, C. A. Tharp, E. C. Mackey, R. G. Dalton, I. F. Nock, H. D. Crandall, N. S. Seeley, N. W. Brewbaker, A. G. Pelley, C. S. Wickham.

A band of 15 pieces and a team of basketball players of the U. S. S. *Utah* with Ensign Fort in charge visited Gatun Y. M. C. A. on Wednesday evening, January 21.

A concert was given and a game of basketball was played with the Gatun team, the score resulting favorably to Gatun. E. D. Christopherson acted as referee. Three hundred people were present. Following the game and concert, refreshments were served in the game room where Mr. G. A. Reeder, International Secretary of the Y. M. C. A., gave an informal talk on V. M. C. A. work on battlefields.

Three hundred and thirty-six people saw moving pictures on Friday evening, January 24. D. Roswell Homer played several piano selections.

A duckpin bowling fest was held at Gatun clubhouse on Saturday, January 25 with Cristobal and Culebra as visiting teams. Refreshments were served and a general good time enjoyed. The scores follow:

Gatun.	Cristobal.
Harper..... 70 94 99	Herrington.. 84 86 100
Carlson..... 92 84 81	Orr..... 85 81 86
Gibson..... 82 70 75	Gibson..... 88 75 83
Morrissey... 95 77 83	Blind..... 94 87 100
Wurster.... 91 88 81	Barrett..... 92 93 95
Totals.... 430 413 419	443 422 464

Gatun.	Culebra.
Green..... 82 91 108	Silvers..... 86 71 85
DeMoll..... 83 96 86	Steele..... 83 74 86
Humphrey.. 95 99 80	Kersey..... 86 99 94
Well..... 84 106 94	Anderson... 103 90 90
Claherty... 81 91 84	Case..... 78 95 85
Totals.... 425 483 452	436 429 440

In the ragtime tenpin tournament the two highest scores are Humphry and Wurster, 1,071; Barte and Miller, 1,058.

In the ragtime duckpin tournament three teams are tied for first place: Harper and Morrissey, 552; DePoorter and Wells, 552; Wells and Wurster, 552.

The high games in duckpins for the week ending January 25 are Carlson, 102; Humphrey, 100, 112; Green, 108; Morrissey, 100, 100, 100; Harper, 109, 103; DeMoll, 100, 100; Wurster, 101, 104, 107, 114, 101, 100; Wells, 106, 102, 106, 100.

A 75-yard straight-away and a jumping pit have been constructed at the rear of the clubhouse and the athletes who are to compete in the meet on February 22 are using these each evening for practice.

CRISTOBAL.

On Monday, January 13, a simultaneous checker match was played. Twenty-two men took part. Mr. F. L. Bernsee won the total of 43 games played.

Wednesday, January 15, the Cristobal basketball team played the team from the U. S. S. *Michigan*. Score 31 to 6, in favor of Cristobal. On Thursday, January 23, the U. S. S. *Florida* basketball team was defeated by a score of 13 to 43 in favor of Cristobal's team.

There was an attendance of 130 at the moving picture show Saturday, January 18 and at the show of January 23 the attendance was 220.

The band from the U. S. S. *Florida* gave a concert on Thursday night, January 22. The attendance was 350.

From January 12 to 15 there were prepared at the Cristobal clubhouse 2,000 sandwiches and lemonade each night, as well as from January 19 to 23 a like amount, for serving lunches to the members of the First and Second Divisions of the Atlantic Fleet, while on shore leave en route to Panama City.

The monthly married folks bowling tournament was held on Saturday night, January 18. Mr. and Mrs. Weston won first place with a score of 495; Mr. and Mrs. Buser were second with 481. Mrs. Bell won the five-pound box of candy donated by a novelty shop for the lady making the highest score. Mr. Buser won the week's tickets to a theater for the man making the highest score, and Mr. and Mrs. Collins secured the tickets to the theatre given for the couple finishing in last place.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending February 8, 1913. (75th meridian time):

DATE.	High	Low	High	Low
	A.M.	A.M.	P.M.	P.M.
February 2.....	12.32	7.00	1.35	7.30
February 3.....	1.43	8.00	2.35	8.30
February 4.....	2.40	8.53	3.22	9.20
February 5.....	3.28	9.38	4.00	10.00
February 6.....	4.08	10.16	4.33	10.38
February 7.....	4.42	10.52	5.02	11.11
February 8.....	5.13	11.25	5.30	11.43

Band Concert.

A band concert will be given by the Isthmian Canal Commission Band at Toro Point, C. Z., Sunday, February 2, 1913 at 2.30 p. m.

A concert will be given at Gorgona, C. Z., February 9 at 6 p. m.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold-storage provisions for the week beginning January 29, 1913:

FRESH MEATS.		Price.
Mutton	Stewing, per pound.....	6
	Sholder, neck trimmed off (4 pounds and over), per pound.....	9
	Entire, forequarter (not trimmed, 10 pounds and over), per pound.....	8
	Leg (8 to 10 pounds), per pound.....	17
	Cutlets, per pound.....	18
	Short cut chops, per pound.....	20
Lamb	Stewing, per pound.....	6
	Entire forequarter, neck trimmed off, per pound.....	9
	Leg (5 to 8 pounds), per pound.....	20
	Chops, per pound.....	24
	Cutlets, per pound.....	24
Veal	Stewing, per pound.....	10
	Shoulder, for roasting (not under 4 pounds), per pound.....	12½
	Chops, shoulder, per pound.....	16
	Chops, per pound.....	24
	Loin for roasting, per pound.....	24
	Cutlet, per pound.....	28
Pork	Loin chops or roast, per pound.....	16
Beef	Suet, per pound.....	5
	Soup, per pound.....	8
	Stew, per pound.....	9
	Plate, per pound.....	14
	Corned, No. 1, per pound.....	12
	Corned, No. 2, per pound.....	12
	Chuck roast (3 pounds and over), per pound.....	12
	Pot roast, per pound.....	15
	Rib roast, second cut (not under 3 pounds), per pound.....	16
	Rib roast, first cut (not under 3 pounds) per pound.....	18
	Sirloin roast, per pound.....	19
	Rump roast, per pound.....	19
	Porterhouse roast, per pound.....	20
	Steak, chuck, per pound.....	12½
	Round, per pound.....	13
	Rib, per pound.....	18
	Sirloin, per pound.....	19
	Rump, per pound.....	19
	Porterhouse (not less than 1½ pounds), per pound.....	20
	Tenderloin (Western), per pound.....	30
Venison (Imported)	Stew, per pound.....	6
	Forequarter, (not under 6½ pounds), per pound.....	9
	Rack (not under 5½ pounds) per pound.....	20
	Saddle (not under 7½ lbs.), per pound.....	20
	Leg (not under 9 pounds), per pound.....	20
	Chops, per pound.....	24
	Cutlets, per pound.....	24
MISCELLANEOUS.		
Livers—Beef, per pound.....		11
	Calf, each.....	60
	Half, each.....	30
Steak, Hamburger, pkg.....		13
Sausage—Bologna, per pound.....		11
	Frankfurter, per pound.....	12
	Lieberwurst, per pound.....	13
	Devonshire Farm, per pound.....	19
Sweetbreads—Beef, per pound.....		30
Eggs, fresh, dozen.....		35
	one-half dozen only.....	18
Bluefish, per pound.....		15
Halibut, fresh, per pound.....		15
Salmon, fresh, per pound.....		22
Oysters, quarts, per keg.....		40
Shad, fresh, each.....		50
POULTRY AND GAME.		
Chickens—Fancy roasting, milk fed, large, each.....		1.40
	Fancy roasting, milk fed, med., each.....	1.10
	Fancy roasting, corn fed, about 5½ pounds each.....	1.25
	Fancy roasting, corn fed, about 4½ pounds each.....	1.00
Fowls, each.....		1.00
Ducks, (Western, about 4½ pounds), each.....		1.25
Geese, each.....		1.90
Broilers, milk fed, each.....		70
Broilers, corn fed, each.....		60
Turkeys, per pound.....		26
Squabs, each.....		35
Capon, each.....		2.10
Ducks, blackhead, pair.....		60
	teal, pair.....	50
Partridges, pair.....		1.30
Grouse, per pair.....		1.30
Pheasants, per pair.....		1.30
CURED AND PICKLED MEATS.		
Ham—Sugar cured, per pound.....		20
	Sliced, per pound.....	22
	Half, for boiling, per pound.....	21
	Boiled, per pound.....	28
	Hocks, per pound.....	18
Beef, salt, family, per pound.....		12
Bacon—Breakfast, whole piece, per pound.....		25
	Sliced, per pound.....	26

Ham, Lunch, per pound.....	32
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00
Pigs' feet, per pound.....	9
Tongues, per pound.....	18

DAIRY PRODUCTS.		Price.
Butter—Creamery, special, per pound.....		40
	Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....		10
	Roquefort, per pound.....	35
	Young America, per pound.....	22
	Swiss, per pound.....	28
	Edam, each.....	1.00
	Parmesan, per pound.....	35
	Edam, tin.....	26
	Gouda, per pound.....	34
	Snappy, cake.....	10
Milk (Certified), per bottle.....		**20
Fer-mil-lac, bottle.....		**20
Ice cream, quart.....		±25
½ gallon.....		±50

VEGETABLES AND FRUITS.		Price.
Beets, per pound.....		3
Celery, per head.....		6
Cabbage, per pound.....		3
Cucumbers, per pound.....		8
Carrots, per pound.....		3
Lettuce.....		*10
Onions, per pound.....		3
Parsley, per bunch.....		3
Potatoes, white, per pound.....		3
	sweet, per pound.....	*2
Parsnips, per pound.....		3½
Squash, per pound.....		3
Turnips, per pound.....		3
Yams, per pound.....		3
Apples, per pound.....		4
Cranberries, per pound.....		10
Grapes, Spanish, per pound.....		12
Grape fruit, each.....		4
Lemons, dozen.....		24
Limes, per 100.....		80
Oranges, Jamaica, per dozen.....		12

*Indicates reductions from last list.
**Indicates 4 cents allowed for return of bottle.
†Indicates advances on last list.
‡Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock supply next lightest weight is supplied and refund note sent for difference.
±Sold only from Commissaries; no orders take for delivery.

Rainfall from January 1 to 18, 1913, Inclusive.

STATIONS.		Maximum in one day.	Date.	Total for period.
Pacific Section—		Ins.		Ins.
Ancon.....		.23	6	.28
Balboa.....		.27	6	.38
*Miraflores.....		.35	2	1.14
Pedro Miguel.....		.10	1	.16
Rio Grande.....		.69	8	.73
Central Section—				
Culebra.....		.56	8	.57
*Camacho.....		.45	8	.53
Empire.....		.86	8	.89
Gambao.....		.73	8	.80
*Juan Mina.....		.04	1	.09
Alhajuela.....		.08	1	.10
*El Vigia.....		.09	1	.09
*Gorgona.....		.49	8	.85
*Frijoles.....		.62	8	1.12
*Monte Lirio.....		.37	16	1.07
Atlantic Section—				
Gatun.....		.44	5	1.82
*Brazos Brook.....		1.60	3	3.88
Colon.....		2.32	1	4.22
Porto Bello.....		.39	5	12.06

*Standard rain gauge—readings at 5 p. m. daily.
Automatic rain gauge at unstarred stations—values midnight to midnight.

Rainfall from January 1 to 25, 1913, Inclusive.

Pacific Section—		Ins.		Ins.
Ancon.....		.23	6	.38
Balboa.....		.27	6	.51
*Miraflores.....		.35	2	1.61
Pedro Miguel.....		.46	23	.66
Rio Grande.....		.86	23	1.62
Central Section—				
Culebra.....		.56	8	1.12
*Camacho.....		.45	8	1.10
Empire.....		.86	8	1.41
Gambao.....		.77	23	1.60
*Juan Mina.....		.25	24	.39
Alhajuela.....		.08	1	.14
*El Vigia.....		.09	1	.12
*Gorgona.....		.86	24	1.88
*Frijoles.....		.62	8	1.53
*Monte Lirio.....		.40	23	1.57
Atlantic Section—				
Gatun.....		.44	5	1.96
*Brazos Brook.....		1.60	3	4.13
Colon.....		2.32	1	4.45
Porto Bello.....		.39	5	12.74

*Standard rain gauge—readings at 5 p. m. daily.
Automatic rain gauge at unstarred stations—values midnight to midnight. †To 5 p. m., January 24.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hemburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Colon.....	P. R. R. Tuesday.....	Jan. 28
Advance.....	P. R. R. Monday.....	Feb. 3
Panama.....	P. R. R. Monday.....	Feb. 10
Allianca.....	P. R. R. Saturday.....	Feb. 15
Colon.....	P. R. R. Friday.....	Feb. 21
Advance.....	P. R. R. Friday.....	Feb. 28
Advance.....	P. R. R. Friday.....	Feb. 28
Panama.....	P. R. R. Friday.....	Mar. 6
Allianca.....	P. R. R. Wednesday.....	Mar. 12
Colon.....	P. R. R. Tuesday.....	Mar. 18
Advance.....	P. R. R. Tuesday.....	Mar. 25
Panama.....	P. R. R. Monday.....	Mar. 31
Allianca.....	P. R. R. Saturday.....	Apr. 5
Colon.....	P. R. R. Saturday.....	Apr. 12
Advance.....	P. R. R. Saturday.....	Apr. 19
Panama.....	P. R. R. Friday.....	Apr. 26
Allianca.....	P. R. R. Thursday.....	May 1
Colon.....	P. R. R. Wednesday.....	May 7

CRISTOBAL TO NEW YORK.

Panama.....	P. R. R. Tuesday.....	Jan. 28
Allianca.....	P. R. R. Sunday.....	Feb. 2
Colon.....	P. R. R. Sunday.....	Feb. 9
Advance.....	P. R. R. Saturday.....	Feb. 15
Panama.....	P. R. R. Saturday.....	Feb. 22
Allianca.....	P. R. R. Friday.....	Feb. 28
Colon.....	P. R. R. Saturday.....	Mar. 8
Advance.....	P. R. R. Wednesday.....	Mar. 12
Panama.....	P. R. R. Tuesday.....	Mar. 18
Allianca.....	P. R. R. Monday.....	Mar. 24
Colon.....	P. R. R. Sunday.....	Mar. 30
Advance.....	P. R. R. Monday.....	Apr. 7
Panama.....	P. R. R. Saturday.....	Apr. 12
Allianca.....	P. R. R. Friday.....	Apr. 18
Colon.....	P. R. R. Thursday.....	Apr. 24
Advance.....	P. R. R. Thursday.....	May 1
Panama.....	P. R. R. Wednesday.....	May 7
Allianca.....	P. R. R. Tuesday.....	May 13

NEW YORK TO COLON.

Pastores.....	U. F. C. Saturday.....	Jan. 25
Prinz August Wilhelm.....	H. A. Saturday.....	Jan. 25
Metapan.....	U. F. C. Wednesday.....	Jan. 29
Trent.....	R. M. Saturday.....	Feb. 1
Tivives.....	U. F. C. Saturday.....	Feb. 1
Prinz Sigismund.....	H. A. Saturday.....	Feb. 1
Zacapa.....	U. F. C. Wednesday.....	Feb. 5
Prinz Joachim.....	H. A. Saturday.....	Feb. 8
Sixola.....	U. F. C. Saturday.....	Feb. 8
Almirante.....	U. F. C. Wednesday.....	Feb. 12

COLON TO NEW YORK.

Almirante.....	U. F. C. Thursday.....	Jan. 30
Prinz Eitel Friedrich.....	H. A. Monday.....	Feb. 3
Carrillo.....	U. F. C. Tuesday.....	Feb. 4
Magdalena.....	R. M. Tuesday.....	Feb. 4
Santa Marta.....	U. F. C. Thursday.....	Feb. 6
Prinz August Wilhelm.....	H. A. Tuesday.....	Feb. 11
Pastores.....	U. F. C. Tuesday.....	Feb. 11
Metapan.....	U. F. C. Thursday.....	Feb. 13
Prinz Sigismund.....	H. A. Monday.....	Feb. 17
Tivives.....	U. F. C. Tuesday.....	Feb. 18
Zacapa.....	U. F. C. Thursday.....	Feb. 20
Prinz Joachim.....	H. A. Tuesday.....	Feb. 25

NEW ORLEANS TO COLON.

Abangarez.....	U. F. C. Wednesday.....	Jan. 29
Cartago.....	U. F. C. Saturday.....	Feb. 1
Atenas.....	U. F. C. Wednesday.....	Feb. 5
Heredia.....	U. F. C. Saturday.....	Feb. 8
Parismina.....	U. F. C. Wednesday.....	Feb. 12
Turrialba.....	U. F. C. Saturday.....	Feb. 15

COLON TO NEW ORLEANS.

Atenas.....	U. F. C. Thursday.....	Jan. 30
Heredia.....	U. F. C. Thursday.....	Jan. 30
Abangarez.....	U. F. C. Thursday.....	Feb. 6
Parismina.....	U. F. C. Thursday.....	Feb. 6
Cartago.....	U. F. C. Thursday.....	Feb. 13
Atenas.....	U. F. C. Saturday.....	Feb. 15
Heredia.....	U. F. C. Thursday.....	Feb. 20
Parismina.....	U. F. C. Saturday.....	Feb. 22

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers for New York, via Kingston and Santiago de Cuba, sail thus: the *Prinz Joachim* and the *Prinz August Wilhelm* on alternate Tuesdays at 10 a. m., and the *Prinz Sigismund* and the *Prinz Eitel Friedrich* on alternate Mondays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays at 3 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Boca de Toro, on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m.



The Canal Record

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Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Riprapping Gatun Dam.

The lake side of Gatun Dam will be riprapped with hard rock for a distance of ten feet above and below the normal level of the water, 85 feet above sealevel. About 175,000 cubic yards will be required for this purpose, and a steamshovel has been set at work in one of the borrow pits near Monte Lirio to procure this rock. Earlier in the history of the Canal work it was believed that the trap rock from the Bas Obispo dike of Culebra Cut could be used for this purpose, and to that end a large amount of this rock was stored at Gatun. It soon developed, however, that it weathered rapidly and would not answer for the purpose, therefore it was used elsewhere in the work at Gatun. The rock from the borrow pit is hard and stands both air and water well. It will be dumped upon the south slope of the dam, without effort being made to place it regularly. Paving the slope would not be profitable, because the material in the dam is going through the process of shrinking, and evenly laid rock would not settle evenly.

Temporary Coaling Dock at Balboa.

A new coaling dock for vessels at the Pacific entrance must be provided during the next few months, because work on the Balboa terminals will make the use of the present dock impossible after June 1. A trestle will be built at the north end of the steel pier, on the site of the dock that recently slid towards the canal.

Four other sites were considered, one at the north end of the dredged channel of the Canal at Corozal, where the Fortifications division has its coaling trestle, a second at the south end of the steel pier, a third any location on the dump at Balboa projecting towards Naos Island, and a fourth at the intersection of the Naos Island Breakwater with the French Canal channel. All of these presented obstacles of construction, cost, or operation greater than those to be met with in the site determined upon.

It is proposed that a temporary trestle of

about 120 feet usable length be constructed in such manner that barges can be filled from it directly from side dump cars. The necessary approach tracks, aprons, and trestle are estimated as costing from \$3,500 to \$5,000. This trestle is for use only until the permanent coaling plant provided for on the east side of the entrance to dry dock No. 1 is ready for use.

The Joint Land Commission.

Dr. Roland P. Falkner of Washington, D. C., and Prof. L. S. Rowe of Philadelphia have been appointed by the President to represent the United States on the Joint Commission which is to adjudicate claims for Canal Zone lands. The representatives for Panama are the Hon. Federico Boyd, and the Hon. Samuel Lewis. Dr. Falkner is an eminent statistician who has been connected with the Bureau of the Census; Professor Rowe is a jurist and economist who has represented the Government of the United States in Latin-American affairs on several occasions, and at present is a member of the faculty of the University of Pennsylvania. Messrs. Boyd and Lewis have been prominent in the Government of Panama for many years.

The Commission will act under Articles VI and XV of the Treaty of February 26, 1904 between the United States and Panama. The first commission on lands made its report on August 8, 1908.

North Guide Wall—Gatun Locks.

The construction of the north guide wall of Gatun Locks is the most important part of that work at present, because upon its completion depends the earliest time at which the locks can be used. A slide occurred in the east bank of the north approach on January 25 that will set the construction of the guide wall back several weeks, and the date set for the completion, June 30, must therefore be advanced. This part of the locks involves the placing of only 123,000 cubic yards of concrete, out of the total of 2,043,000 cubic yards of the locks in Gatun; and yet it has been one of the most difficult and tedious parts of the whole job.

The surface of the land just north of Gatun Locks, the area in which the north guide wall must be built, is only a few feet above sealevel, and the rock of the hill in which the locks are emplaced dips suddenly here to depths varying from 35 feet to a hundred or more feet below sealevel. The excavation for the approach itself has been taken down to 51 feet below sealevel by dredge, and that for the foundations of the wing walls on either side of the approach and for the center guide wall down to from 65 to 70 feet below sealevel. The wing walls and part of the guide wall are based upon solid rock, but the greater part of the guide wall is to be founded upon piles driven to bed rock. The material through which the excavation has been car-

ried is composed of silt, and clay, all below sealevel and, therefore, containing so much water that it has little cohesiveness. All this excavation had been completed, and the driving of piles had been advanced for a distance of 600 feet out of the 1,000-foot length of the guide wall, when the slide of January 25 occurred.

The material on the east bank had shown no tendency to move towards the approach channel, although the excavation had been completed several weeks and there was nothing to hold the bank except its own coherency. It broke away without warning, carrying with it into the channel two railroad tracks, picking up a hoisting engine that had been used on the bank in "snaking" piles and depositing it three hundred feet away, wrecking two of the four pile drivers that were at work on the foundation of the guide wall, pushing the barge upon which the unwatering pumps were mounted far westward of its original position, and in fact moving or wrecking everything in its path. A part of the east bank 500 feet in length and 300 feet in breadth moved slowly into the Canal, and completely covered seven hundred feet of the guide wall site with a stratum of viscous mud from three to fifteen feet in depth.

Preparations were in progress to lay concrete in the first 600 feet of the guide wall, because it requires a section of this length for the most advantageous use of the plant assigned to the work. The laying of concrete in the first three hundred feet can be carried on, but the slide must first be cleaned out before the plant can work to full capacity. The material overlying the site of the guide wall is too soft to sustain the weight of a steamshovel, and therefore it must be taken out by locomotive crane with clam shell bucket, a comparatively slow process. To this end two trestles are being constructed over the soft mud, one for the crane to operate upon and the other for the cars into which it will load spoil. The exact amount it will be necessary to excavate before the laying of concrete in the guide wall may be carried forward, cannot be ascertained, but it is estimated that at least 5,000 cubic yards of material must be dug out of the slide in order to bring the approach to its proper depth.

Movements similar to this occurred in the east bank of the lower lock chamber, and caused no little inconvenience. In the construction of the wing walls, therefore, they were anticipated. On either side of the site of these walls the earth was dug down to rock and a rock fill was made, upon which the cableway towers could operate. This fill, which is really a wall of rock, has protected the site of either wing wall from slides, and the construction of these is therefore advancing without menace from land movements. The east wing wall is about 75 per cent completed. In excavating to rock for the west wing wall, however, a sharp dip in the rock

has been encountered, and in the northern section, near the north abutment, the excavation has already been carried down to 65 feet below sealevel. This digging must continue by hand until bed rock is reached. Meanwhile the placing of concrete in this wall is advancing, one cableway being devoted to the concrete laying, while another is lifting from the foundation pit the soft mud and rotten sandstone that overlies the bed rock.

Gatun Dam Spillway.

The concrete work in the Spillway at Gatun Dam is over 96 per cent completed, 216,150 cubic yards, out of a total of 225,000 having

been placed at the close of work on February 1. A statement of the amount laid each day last week, and of the total in place, follows:

DATE.	Concrete laid.	Hours worked.	No. mixers used.
	Cu. Yds.		
January 27.....	192	6 75	1
January 28.....	130	6 50	2
January 29.....	221	7 50	1
January 30.....	162	7 25	1
January 31.....	168	6 00	1
February 1.....	112	5 00	1
Total.....	988	39 00	
Previously reported.	215,162		
Grand total.....	216,150		

CONCRETE WORK IN THE LOCKS.

Over 96 per cent of the total of 4,446,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on February 1, the amount in place being 4,286,882 cubic yards.

GATUN LOCKS.

Over 95 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on February 1 being 1,945,448 cubic yards, out of a total of 2,043,730. A statement of the amount placed in the locks each working day of the week ending February 1, and of the total, follows; and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers.	Concrete placed.	Hours worked.	No. of mixers.		
	Cu. Yds.			Cu. Yds.				
January 27.....	1,236	20 56	4					1,236
January 28.....	1,486	24 76	4					1,486
January 29.....	1,316	21 92	4					1,316
January 30.....	1,200	20 00	4					1,200
January 31.....	1,276	21 28	4					1,276
February 1.....	1,218	20 30	4					1,218
Total.....	7,732	128 82	4					7,732
Previously reported								1,937,716
Grand total.....								1,945,448

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 908,842 cubic yards having been placed at the close of work on February 1. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			1-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.					
January 27.....				241	25.50	4			241
January 28.....				293	29.00	4			293
January 29.....				303	32.00	4			303
January 30.....				300	31.50	4			300
January 31.....				284	30.00	4			284
February 1.....				256	27.00	4			256
Total				1,677	175.00	4			1,677
Previously reported.....								4,493	907,165
Grand total.....								4,493	908,842

MIRAFLORES LOCKS.

Over 95 per cent of the concrete for the system of two twin locks at Miraflores was in place February 1, the total amount on that date being 1,432,592 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.						Mixed by hand.	Large stone.	Total.	SPILLWAY.			Total.
				1-cubic yard mixers.			½-cubic yard mixers.						AUXILIARY PLANT. 1-cubic yard mixers.			
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers				Concrete placed.	Hours worked.	No. of mixers	
	Cu. Yds.			Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.			
January 27.....	1,492	38.33	8	83	8.50	1	188	18.50	2			1,763	144	7.00	1	144
January 28.....	1,637	37.83	8	94	8.50	1	180	17.50	2			1,911	162	7.50	1	162
January 29.....	1,528	38.33	8	36	4.00	1	214	17.50	2			1,778	153	7.50	1	153
January 30.....	2,178	49.67	8	43	4.00	1	137	15.00	2			2,358	134	7.00	1	134
January 31.....	2,319	50.00	8				89	10.00	1			2,408	167	7.50	1	167
February 1.....	1,936	45.50	8	97	8.50	1	192	17.50	2			2,225	117	8.00	1	117
Total.....	11,090	259.66	8	353	33.50	1	1,000	96.00	1.83			12,443	877	44.50	1	877
Previously reported											3,693	1,420.149				3,196
Grand total....											3,693	1,432.592				4,073

Hydraulic Spoil for Fill at Colon.

The excavation of slips alongside the piers and wharves of the Cristobal terminals will necessitate the removal of considerable quantities of soft material in addition to the rock which has been excavated by the dipper dredge *Mindi*. The pipeline suction dredge No. 4, which is now undergoing repairs at the dry dock, will begin work west of Pier 17 within a few weeks, removing silt and soft earth. This spoil will be discharged in the new fill east of Colon, raising and smoothing the present area and extending its limits into the swamp toward Folks River. The 18-inch discharge pipe will extend along the mole at the inner end of the piers, under the Panama railroad tracks, across Front Street and out Twelfth Street to the fill, a distance of about half a mile. Section estimates indicate that 90,000 cubic yards of soft material are to be removed in the area assigned to this dredge, but the tendency to slide from the sides, in connection with silting due to the dumping, will probably make it necessary to remove double that quantity.

Pilots, Masters, Mates, Engineers, Chauffeurs.

Examinations for pilots, masters, mates, engineers, and chauffeurs will be held by the Board of Local Inspectors at the Administration Building, Ancon, on Wednesday, February 12, 1913, beginning promptly at 8 a. m. All applicants for licenses must secure from the Executive Office, Department of Civil Administration, Ancon, forms of application and information respecting the filling out of same, not later than the day previous to the examination. In addition, all persons desiring chauffeurs' licenses must provide themselves with automobiles with which to demonstrate their ability to properly operate same.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the weeks ending January 18 and 25:

DATE.	Hours worked.	Cubic yards.
January 13.....	6 50	2,497
January 14.....	8 20	2,618
January 15.....	7 35	2,660
January 16.....	8 25	2,992
January 17.....	10 25	2,976
January 18.....	9 05	2,176
Total.....	50 40	15,919
January 20.....	4 35	2,376
January 21.....	10 50	3,171
January 22.....	10 20	2,920
January 23.....	9 15	3,874
January 24.....	8 45	2,596
January 25.....	8 45	2,826
Total.....	52 30	17,763

Mosquitoes at Gatun.

It has been determined that Gatun Lake is not responsible for the plague of mosquitoes which has prevailed for several weeks at Gatun. The breeding place is a swamp and is north of the dam, between the French Canal and the Chagres river. The swamp, on account of receiving the water from the dredges operating north and east of it, is composed of about 30 per cent of sea water. Its eastern edge is more than 3,800 feet from the village, and since the beginning of sanitary operations on the Isthmus in 1904 so long a flight of mosquitoes in such large numbers has not been noted. The period of maximum flight is between 6.15 and 7.30 o'clock in the evening, when there is usually a lull in the wind, and at this time mosquitoes are plainly visible against the skyline along the banks of the French Canal, about opposite the cement shed. Operations are in progress for draining the swamp, thereby rendering it free from mosquito propagation.

The mosquitoes from this source are exclusively a variety of *Anopheles*—a malarial mosquito. So far, *Anopheles* have not bred in the lake, the little breeding noted there being almost wholly the harmless *Culex*.

Civil Service Examinations.

A supply of the Manual of Examinations for the spring of 1913 has been received.

Examinations for the following-named positions are scheduled to be held, probably on March 16: Assistant, Philippine Service; assistant engineer, Reclamation Service; assistant inspector of boilers, assistant inspector of hulls, Steamboat-Inspection Service; clerk, Isthmian Canal Service; copyist topographic draftsman, topographic draftsman, non-apportioned Departmental Service; junior engineer draftsman, Engineer Department at Large; forest assistant, Forest Service; forest assistant, Philippine Service; industrial teacher, Philippine Service; junior engineer, Reclamation Service; kindergarten teacher, Indian Service; local inspector of boilers, local inspector of hulls, Steamboat-Inspection Service; matron, Indian Service; physician, all services; teacher, Philippine Service; veterinarian.

Women will be admitted only to the examinations for copyist topographic draftsman, topographic draftsman, kindergarten teacher, matron, and teacher, Philippine Service.

Applications for the above-named examinations will not be received in this office after February 21; this date will be changed if necessary. In requesting information, the kind of examination desired should be specifically mentioned.

The examinations will be held probably at Empire, in the Commission clubhouse, but the place of examination should be omitted in application forms. The date of examination should also be omitted.

All instructions found in application forms and in the Manual of Examinations concerning an examination desired should be carefully read and understood before filing application. Vouchers should show only the place of their bodily residence.

application. Vouchers should show only the place of their bodily residence.

ISTHMIAN CIVIL SERVICE BOARD.

Culebra, C. Z., February 3, 1913.

LABOR FORCE AND QUARTERS IN DECEMBER.

The total force at work on the Canal and Panama railroad on December 24, was 39,336. Of this number 28,698 were employed on the canal by the Commission, 4,677 by contractors, and 5,961 by the Panama railroad. The gold force on the Canal work composed almost exclusively of white Americans, was 4,325. The total Government force was as follows:

DEPARTMENT	SILVER EMPLOYES.*													Total silver.	Total gold.	Grand total.
	Artisans.					European laborers.		West Indian laborers.								
	Monthly.					30 cents.	16 cents.	20 cents.								
		44 cents.	32 cents.	25 cents.	20 cents.				16 cents.	12 cents.	10 cents.	7 cents.				
Construction and Engineering	4,112	10	10	50	9.0	3,343	3,351	935	103	332	4,941	1,884	1,226	20,447	3,330	23,777
Civil Administration	12			2	4	23						9		158	289	447
Sanitation	655			3	3	3			1		7	315	2	989	351	1,340
Quartermaster's	863			1.5	163	5	36	19	27		134	621	112	2,008	184	2,192
Subsistence	754					1								762	51	813
Disbursements	7													7	25	32
Examination of Accounts	41													4	93	97
Total	6,521	10	10	395	1,059	3,375	3,417	954	131	332	5,082	2,829	240	24,375	4,323	28,698
Month previous	6,542	10	10	382	1,075	3,503	3,638	899	134	363	5,277	3,054	268	25,160	4,341	29,501

*All wages specified are in gold. †Includes one at 5 cents. ‡Includes six at 5 cents.

The force report for the Department of Construction and Engineering on December 25, follows:

DIVISION	SILVER EMPLOYEES.*													Total silver.	Total gold.	Grand total.
	Artisans					European laborers.		West Indian laborers.								
	Monthly.	14 cents.	12 cents.	10 cents.	8 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.				
Chief Engineer .	1,670	1	130	503	1,913	1,136	518	20	...	2,717	365	80	9,553	1,437	10,490	
Mechanical ..	240	6	26	89	395	52	1	...	...	813	62	10	1,706	790	2,496
Atlantic ..	1,294	4	72	236	616	681	327	...	...	601	116	27	3,956	557	4,513
Central ..	933	...	22	112	419	1,512	89	83	332	73	1,341	109	5,732	546	6,278	
Total	4,112	10	10	250	9.0	3,343	3,381	955	103	332	4,941	1,884	1,226	20,447	3,330	13,777
Month previous,	4,107	10	12	240	8.6	3,472	3,599	867	105	367	5,154	2,086	253	21,148	3,310	14,458

*All wages specified are in gold. †Includes one at 5 cents. ‡Includes three at 5 cents.

The occupants of Commission quarters on December 31, 1912, were as follows:

PLACE.	Gold.			Europeans.			West Indians.		
	Men	Women	Children	Men	Women	Children	Men	Women	Children
Balboa	218	30	32	375			350		
Ancon	505	316	225	13			753	6	
Corozal	527	87	88	310			384	5	5
Miraflores	22	2	1	608	4	10	195	4	3
Pedro Miguel	314	76	77	332	4	3	307	35	38
Paraiso	290	73	77	185	3	11	209	109	138
Culebra	336	173	163	433	43	84	325	108	164
Empire	495	310	287	433	55	73	471	137	208
Las Cascadas	171	102	106	38	17	29	243	170	148
Bas Obispo	70	45	25	133	23	37	132	52	67
Gorgona	722	229	302	75	5	11	276	93	151
Gatun	954	211	201	1,261	20	31	1,030	30	43
Cristobal	824	282	287	160			1,294	213	351
Toro Point	58	17	28	79			241		
Porto Bello	61	29	26	86			214	2	2
Total	5,567	1,982	1,925	4,483	174	289	6,424	964	1,318

(1) Includes Sabanas police station, Taboga Island, Culebra Island, Palo Seco, and Naos Island. (2) Includes Europeans and Asiatics. (3) Includes 65 Panamanians. (4) Includes 43 East Indians. (5) Includes 73 Panamanians. (6) Includes Matachin. (7) Includes Colon Hospital. (8) Includes 30 East Indians. (9) Includes five Asiatics. Included in the above also, are 45 families, and 459 bachelors, belonging to the gold force of contractors.

CLASSIFIED EXPENDITURES—ISTHMIAN CANAL COMMISSION.

PERIODS.	Department of Civil Administration.	Department of Law.	Department of Sanitation.	Department of Construction and Engineering.	General Items.	Fortifications.	Total.
Total to June 30, 1909	3,427,090.29		9,673,539.28	69,622,561.42	78,022,606.10		160,745,797.09
Total—Fiscal Year, 1910	769,351.37		1,803,040.95	26,300,167.05	2,863,088.83		31,675,648.20
Total—Fiscal Year, 1911	755,079.44		1,777,792.62	27,477,776.19	3,097,959.72		33,048,607.97
Total—Fiscal Year, 1912	820,398.57	24,729.16	1,620,391.12	28,897,738.10	2,819,926.53	1,212,881.66	35,396,065.14
July, 1912	63,913.12	1,448.53	123,803.64	2,649,246.61	200,970.55	104,126.92	3,143,509.37
August, 1912	62,182.51	1,468.26	123,154.48	2,539,680.83	198,054.61	111,402.55	2,739,834.02
September, 1912	59,201.01	1,207.82	129,385.70	2,285,979.89	77,003.53	127,168.25	2,670,946.20
October, 1912	64,383.37	2,033.75	137,571.61	2,473,280.76	83,523.30	129,736.37	2,890,532.16
November, 1912	62,240.12	1,892.14	119,031.66	2,420,085.77	75,779.01	300,016.33	2,979,005.03
Grand total	6,023,799.80	32,779.66	15,438,714.06	146,666,516.62	87,142,802.96	1,985,332.08	275,289,945.18

*Denotes credit.

TWO NEW DIPPER DREDGES.

Contract for Two 15-Yard Dredges Let in United States.

Two 15-yard dipper dredges have been contracted for with the Bucyrus Company of South Milwaukee, one to be delivered at a port on the Atlantic coast for towing to the Isthmus on or before December 1, 1913, and the other on or before January 1, 1914. A penalty of one hundred dollars is provided for each day that the contractor overruns the time of delivery, and a like premium for him for each day that he anticipates in delivery. The price agreed upon is \$258,500, a total of \$517,000. The contract was entered into under the law for open market purchases under authority of the Secretary of War, dated January 13, 1913. The principal features of the dredges according to the specifications are summarized in the following:

Fifteen Yard Dipper Dredge with 16 by 28 by 24 Twin Tandem Compound Main Hoisting Engines with Single Part Wire Rope Hoist and Steel Hull.

This dredge will dig to a depth of 50 feet below the surface of the water; the machinery throughout will be constructed to withstand maximum pull of the engines when working with 125 pounds steam pressure at the engine and condensing. The dipper will be hoisted by a single part steel wire cable. All parts of the machinery will be designed especially with a view to rapidity of work and convenience in operation.

Hull—The hull will be of steel, approximately 136 feet overall length; 44 feet width; 15½ feet deep at bow, 13½ feet deep at stern.

Plating—Bottom 17 pounds per square foot except outer strakes which will be 20-pound; side plating bilge strake 17-pound; sheer strake 20-pound; bow and stern plating 20-pound; deck plating 12½-pound except outer strakes which will be ¾-inch diamond or checker plates, raised pattern. **Frame Spacing**—Frame spacing approximately 24-inch centers; floor beams 12-inch 25-pound channels; deck beams 5-inch by 3½ by 5/16-inch Z bars 11.6 pounds per foot; Frames 6 by 3½ by ¾-inch Z bars. Every fifth frame to be ¾-inch web frame, about 30 inches deep with 3½ by 3½ by ¾-inch angles; intercostal stringers of 15-inch 33-pound channels will be set between web frames to support Z frames. A heavy structural steel truss will be built into the hull with cross trusses between spud wells, the trusses will also be arranged at the bow to support the swing circle. An intermediate cross truss will be located at about frame 24 and a transverse water tight bulkhead between boiler and engine rooms. **House and Cabins**—A wooden house will cover the machinery and main deck, and on the upper deck there will be cabins for the crew.

Main Engines—The main engines will be twin tandem compound with cylinders 16 by 28 inches in diameter and 24-inch stroke; crankshaft of forged steel 12 inches in diameter with journals 9¼ inches in diameter and 14 inches long. Link motion of the Stephenson type with 6-inch diameter steam actuated reverse.

Hoisting Drum and Gears—The hoisting drum will be of differential type and cast of steel, small diameter 55 inches, large diameter 84 inches at the bottom of the grooves; grooved for 3-inch diameter wire rope. The hoisting shaft is to be of forged steel about 14½ inch diameter with journals 11½-inch diameter by 18 inches length. Power will be ap-

plied to the drum by means of two outside woodlined band frictions, one on each side of the drum, both being operated by means of a single steam cylinder 14 inches in diameter, placed at one end of the drum shaft and attached to a thrust spindle passing through the center of the shaft. This thrust spindle operates the friction band through a system of bell cranks and toggles.

A single lowering brake 12 inches wide, same diameter as the clutch frictions, will be provided on one end of the hoisting shaft. The brake band will be controlled by steam friction. A ratchet and pawl will be provided to hold up the dipper when not running.

The drum will be driven by two gears, one at each side meshing with the corresponding pinions on the intermediate shaft. The intermediate shaft will be driven from the crank shaft through a single gear which will have steel casting rim bolted to a heavy cast steel spider arranged so that the rim can be replaced without stripping the shaft.

Bearings for the intermediate shaft will be bolted directly upon engine bed plates. The bed plate, which also contains the drum shaft bearings, will be a heavy steel casting, and will form an extension of the engine bed plate, securely bolted to the same and to the structural base built into the hull. The drum shaft bearings will be of the quarter box type with wedge adjustment.

Boom—The boom will be of structural steel about 62 feet long, with curved top and bottom chords, all parts of ample section for the stresses they must bear; the boom feet will be heavy steel castings with webs and flanges of sufficient length to provide ample rivets. The shipper shaft bearings will be bolted to the top chords.

Shipper Shaft and Brakes—The shipper shaft on the boom will be hollow and cast of nickle chome steel, not less than 9½-inch diameter in the middle, and 8-inch diameter in the bearings. Pinions and flanges will be cast in one piece with the shaft. The brake wheels will be steel castings 75 inches in diameter with 12-inch face, and will be bolted to the flanges on each end of the shipper shaft. The brakes will be of the double acting differential type, and will be operated by means of a combined hand lever and foot treadle.

Base Plates—The boom will be stepped into a steel casting pivot bearing formed with sockets to receive the boom feet. This pivot will rotate on a heavy cast steel base plate securely bolted to the hull and having flanges extending over the front of the hull. The pintle will be bushed with bronze, and a bronze wearing plate or washer will be provided between the boom step collar and the base plate. The base plate on which the swing circle will rotate will be a heavy steel casting, with pintle bushed with bronze, and bronze wearing plate or washer between the base plate and the center casting of the swinging circle.

"A" Frame—The "A" Frame will be of structural steel properly proportioned to carry all the loads that may come upon it, each leg of box section. The head and feet and the base castings which support the frame, will be of cast steel; pins in the feet will be of forged steel not less than 7 inches in diameter, and the pin in the frame, for connecting the back guy equalizer, not less than 6½ inches in diameter. An equalizing arrangement consisting of two U-shaped forgings to carry sheaves, and two heavy steel plates for connecting the U straps to the "A" Frame head, will be pro-

vided to equalize the load on the back guy ropes. In the U-shaped forgings there will be two sheaves grooved for 3-inch rope, and of 37-inch diameter at the bottom of the groove.

Swinging Circle—The swinging circle will be of structural steel 24 feet in diameter, and mounted upon the hull truss. Connection to the boom will be made by means of two heavy, built-up girders extending out from the circle, one on each side of the boom. The center will be a heavy steel casting securely bolted to the circle.

Swinging Machinery—The swinging machinery will be operated by an independent double engine having cylinders 12 inches in diameter by 16-inch stroke with link reversing gear. The engine and drum will be mounted upon heavy structural steel bases built into the hull. The links will be reversed by a steam thrust cylinder, controlled by the same lever that operates the throttle. The swinging drum will be of cast steel 42-inch pitch diameter and grooved for 2-inch diameter wire rope, and will carry on one side a housing for a wood lined band brake, on the other a cast iron spider for the driving gear. The brake will be actuated by a steam thrust cylinder with compensating valve motion. The drum shaft will be 7½ inches in diameter with journals 6½ by 12 inches running in cast steel babbitted bearings. The intermediate shaft will be 7 inches in diameter with journals 6½ by 12 inches running in cast steel babbitted bearings. The sheaves, for guiding the swinging ropes from the swinging circle to the swinging drum, will be located on top of the hull truss, will be 42 inches in diameter, and grooved for 2-inch rope.

Spuds and Spud Machinery—There will be two forward spuds of Oregon fir timbers, plated on four sides with steel plates one inch thick, 72 feet long and 48 inches square over the plating. The forward spuds will be operated by an independent double 12 by 16-inch engine with link motion reverse, operated by steam thrust cylinder, controlled by same lever that operates throttle valve. The drums will be of not less than 42 inches diameter, grooved for 2½-inch wire ropes. The dredge will be "pinned-up" and the spuds lifted by 2½-inch wire ropes passing around the top and bottom of each spud; the load to be taken by four parts of rope. Wood lined band brakes will be provided, operated by a suitable steam cylinder to hold the dredge when "pinned-up." A suitable friction clutch, operated by a steam thrust cylinder, will be provided for disconnecting the drum from the engine to allow the dredge to rise and fall with the tide, when not in use. Sheaves for guiding the ropes to the drums will be not less than 45-inch pitch diameter. Each forward spud will be provided with a collapsible spud foot, consisting of two heavy steel castings that will form a foot about 7 by 9 feet when open.

There will be one stern spud of Oregon fir, plated like the forward spuds, and about 80 feet long and 30 inches square over the plating. The machinery will be arranged for a trailing spud. The spud will be hoisted by a wire rope and a winding drum driven through two gear reductions by a 9 by 9-inch double engine located on deck at the foot of the stern spud casing.

The dredge will be equipped with backing machinery, the drum to be operated by a 12 by 16-inch double, nonreversing engine.

Operating Levers—Levers for controlling the dredging machinery will be mounted on the

main forward deck, grouped for convenient operation. They will include a lever for operating the main hoisting engine throttle valve, for the steam cylinder actuating the main hoisting frictions, for the steam cylinder actuating the main lowering brake, for the steam cylinder for reversing the main engine, for the combined throttle and reversing links of the swinging engine, for the steam cylinder actuating the swinging drum brake, for the combined throttle and steam cylinder actuating the friction clutch of the backing engine, for each of the combined throttles and reverse links of the forward spud engines, for operating each of the steam cylinders actuating the forward spud clutches, for operating each of the steam cylinders actuating the forward spud brakes; pulley and rope with handle for operating the pawl for engaging with the ratchet on the main hoist, pulleys and rope with handle for operating the steam whistle. Levers for controlling the stern spud machinery will be mounted at the stern, and levers for controlling the scow moving winches at the end of each winch.

Dippers—There will be two dippers, one of fifteen cubic yards capacity and one of ten cubic yards, the latter especially adapted for digging in rock. They will be dumped, that is the door will be unlatched, by a steam cylinder mounted upon the boom with the necessary guide sheaves, bearings, and brackets.

The 15-yard dipper will be built with shell plate front and sides $\frac{3}{4}$ -inch thick, back plate $\frac{3}{4}$ -inch thick, door 2 inches thick steel plate, top band 2 by 14-inch steel bar around the front and sides projecting back beyond the dipper to support pin for the back brace, bottom band 2 by 16-inch steel bar around front and sides. On the back of the dipper will be two heavy steel castings, the lower one with a double set of lugs to carry the pins for the hinges and for the handle hinge in double shear, the upper casting, a channel shaped girder. The hinges will be of forged steel 10 inches deep and 6 inches wide in heaviest section. The lip will be of manganese steel 50 inches high over all at the center and $9\frac{1}{2}$ inches high at the back edge of the sides, 2 inches thick at the bottom edge, tapering down to $1\frac{1}{4}$ -inch thick at the top of the deepest section. The latch bar will be forged steel not less than 4 inches wide by 5 inches deep; latch keeper also of forged steel 20 inches wide and 4 inches thick at the lower end and 12 inches wide and 2 inches thick at the upper end; lower end recessed to receive hardened steel wearing bar and thickness of latch increased to $5\frac{1}{2}$ inches at this point. This dipper will not have teeth.

The 10-yard dipper will be interchangeable with the 15-yard and will be used in rock excavation. It will have shell plates $\frac{3}{4}$ of an inch thick, back plate $\frac{3}{4}$ of an inch, door of 2-inch steel plate, top band 2 by 12-inch steel bar around front and sides to project beyond the back of the dipper to support the pins for the back braces, bottom band 2 by 10-inch steel bar around front and sides. Heavy steel castings on the back will serve the same purpose as those on the 15-yard dipper. The hinges will be of forged steel, 8 inches deep by 5 inches wide in heaviest section. The lip will be of forged steel $2\frac{1}{2}$ inches thick by 27 inches high overall at center and $9\frac{1}{2}$ inches at the back edge. This dipper will have four heavy forged teeth with hardened steel points.

The dipper handle will be of Oregon fir about 72 feet long reinforced with 2 by 12-

inch bars top and bottom and by 1 by 22-inch plates on both sides of each dipper stick. The racks will be nickel chrome steel castings, 3-inch pitch, 12 inches wide, shrouded to pitch line.

Boilers and Fittings—Two boilers of the Scotch marine type, each having a total heating surface of approximately 2,700 square feet, working pressure of 150 pounds per square inch, will supply steam. Each will have a Morrison suspension furnace, and a double stack with two-inch air space, to stand about 50 feet high above the top of the boiler. There will be also one vertical donkey boiler about 54 inches in diameter and ten feet high, built for 150 pounds steam pressure.

One surface condenser having approximately 1,500 square feet of cooling surface, independent air pump of suitable size, and an 8-inch centrifugal circulating pump, driven by an independent engine, will also be provided.

Other Equipment—The specifications provide for an electric lighting plant equipped with one 10 k.w. 110 volt, direct current generator and a complete lighting system; fuel oil tanks with a capacity of 18,000 gallons of fuel oil; fresh water tanks with 18,000 gallons capacity, and a 5,000-gallon tank for use of the galley; pumps for boiler feed, general service, fresh water, fire service and pumping bilge water; deck fittings, wire ropes and guys, feed water heater, oil feed pumps, ash ejectors, and complete system of piping.

Stages of the Chagres.

Maximum heights of the Chagres River for the weeks ending midnight, Saturday, January 18 and 25, and February 1. All heights are in feet above mean sea level.

DAY AND DATE.	STATIONS			
	Vigia.	Alhajuela	Gambao.	Gatun Lake.
Sun., January 19	127.1	93.2	48.2	48.2
Mon., January 20	126.4	92.8	48.1	48.1
Tues., January 21	126.2	92.4	48.0	48.0
Wed., January 22	126.8	92.9	47.9	47.9
Thurs., January 23	128.2	94.0	48.2	47.9
Fri., January 24	127.9	93.3	48.2	48.1
Sat., January 25	127.2	93.3	48.2	48.2
Sun., January 26	127.1	93.4	48.3	48.3
Mon., January 27	127.2	93.3	48.4	48.4
Tues., January 28	129.5	95.0	49.1	48.6
Wed., January 29	128.5	94.3	49.0	48.7
Thurs., January 30	126.8	93.0	48.6	48.6
Fri., January 31	126.6	93.0	48.4	48.4
Sat., February 1	126.8	93.0	48.4	48.4
Height of low water to nearest foot	125.0	91.0	44.0	

January Rainfall for Three Years.

STATIONS.	1911			1912			1913			Station Av.	Years of record	Rainy days 1913
	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.			
<i>Pacific Section</i>												
Ancon	.83	T	.63	.99	15	8						
Balboa	.38	0	.78	1.09	14	10						
Miraflores	.27	0	2.65	2.14	5	17						
Pedro Miguel	.03	0	1.10	1.01	6	7						
Rio Grande	.02	.03	2.09	1.43	9	6						
<i>Central Section</i>												
Culebra	.02	.05	1.57	1.74	23	8						
Camacho	.04	.04	1.60	1.25	7	8						
Empire	.02	.01	1.67	.85	8	5						
Gambao	.11	.06	2.65	1.87	28	12						
Juan Mina	.04	.15	1.01	.40	3	8						
Alhajuela	.14	.08	.96	1.21	14	9						
El Vigia	.20	.08	.78	1.15	5	5						
Gorgona	.43	.20	3.17	2.00	9	14						
New Frijoles		.67	3.85	2.26	2	19						
Trinidad	.64	1.38	3.45	3.34	6	19						
Monte Lirio	.89	2.14	3.57	3.60	6	11						
<i>Atlantic Section</i>												
Gatun	1.20	.91	4.63	3.92	9	15						
Brazos Brook	1.00	.61	5.72	3.83	7	17						
Colon	.99	.28	6.71	4.03	43	17						
Porto Bello	.84	.67	5.84		6	27						

ORDINANCES

(Canal Zone Ordinance No. 33)

To Amend Rules 90 and 91 of the "Rules for the Navigation of the Panama Canal and Approaches Thereto, including all Waters under the Jurisdiction of the Isthmian Canal Commission" enacted by the Isthmian Canal Commission, December 5, 1910, and approved by the Secretary of War, December 21, 1910,

Be it ordained by the Isthmian Canal Commission as follows:

SECTION 1. Rule 90 of the "Rules for the Navigation of the Panama Canal and Approaches Thereto, Including all Waters under the Jurisdiction of the Isthmian Canal Commission," enacted by the Isthmian Canal Commission December 5, 1910, and approved by the Secretary of War, December 21, 1910, is hereby amended so that the same shall read as follows:

Rule 90. (a) Hereafter it shall be unlawful for any person to navigate upon the waters of the Canal Zone, for the transportation of passengers for hire, any boat propelled by sail or oars until same, upon application of its master or owner, has been inspected by the Board of Local Inspectors, and until there has been issued by said Board a certificate based upon such inspection setting forth the following matters, viz: a brief description of the boat, including a statement of its tonnage; the fact that such inspection has been made and that the boat is seaworthy and is safe and suitable for the transportation of passengers; the total number of passengers and crew which may be carried thereon; the life-saving and other equipment which shall be carried thereon; and the portions of the waters of the Canal Zone upon which, and the routes over which, the boat may navigate. Such certificate shall be valid for one year next following the date of its issuance unless, during that period, said Board shall determine that the boat certificated becomes unseaworthy, or unsafe or unsuitable for the carriage of passengers; in either of which cases said Board shall have the power, and it shall become its duty, to revoke such certificate. Said Board shall also have the authority to make, during the period covered by any such certificate, any inspection or examination of any such boat to determine any question of its seaworthiness, or of its safety and suitability for the transportation of passengers. Said certificate shall be carried on the boat for which same was issued, suitably framed and displayed and protected from the weather, and shall be always open to the inspection of the Canal Zone authorities. After any such boat shall have been inspected and certificated as aforesaid, it shall be unlawful for any person to navigate same upon the waters of the Canal Zone if any of the equipment named in said certificate is not carried thereon, or if the number of passengers and crew carried thereon shall exceed the total number named in the certificate, or if such navigation is upon portions of the waters of the Canal Zone or over routes not designated in said certificate. The master or owner of any such vessel may, within ten days after said Board renders any decision or takes any action upon any question involving the inspection or certification of any such boat, or the revocation of any such certificate, appeal to the Head of the Department of Civil Administration, who may thereupon modify or set aside the action of said Board, and he shall

certify his ruling to said Board for its observance in each case.

(b) It is hereby made the duty of the Collector of Revenues to demand and receive from the owner or master of each such vessel the following compensation for such inspection and certification, in addition to any other fees which may now or hereafter be allowed by law for issuing enrollments and licenses:

For each vessel of less than fifteen (15) gross tons.....	\$5
For each vessel of fifteen (15) gross tons and over and not exceeding one hundred (100) gross tons.....	\$10
For each and every gross ton in excess of one hundred (100) gross tons.....	\$.05

The fees herein provided for shall be for the use and benefit of the Canal Zone Government.

SEC. 2. Rule 91 of said "Rules for the Navigation of the Panama Canal and Approaches Thereto, Including all Waters under the Jurisdiction of the Isthmian Canal Commission" is hereby amended to read as follows:

Rule 91. Any boat, vessel, scow, raft, or other craft, used or employed in violating any of the provisions of Rules 33, 46, 49, 51, 60 and 89, shall be liable for all damages that may be done to the plant of the Isthmian Canal Commission, and said boat, scow, raft, or other craft may be proceeded against summarily by way of libel in the Canal Zone Circuit Courts.

SEC. 3. This ordinance shall take effect thirty (30) days after its approval by the Secretary of War.

Enacted by the Isthmian Canal Commission, December 16, 1912.

Approved by the Secretary of War, January 13, 1913.

(Canal Zone Ordinance No. 34)

Providing for the Licensing of Navigators of Motor Boats.

Be it enacted by the Isthmian Canal Commission, as follows:

Section 1. That for the purposes of this ordinance any boat or vessel operated by means of gas, gasoline, naphtha, or other like fluid, or by electricity, shall be deemed a motor boat.

Sec. 2. That hereafter it shall be unlawful for any person to navigate or operate in the waters of the Canal Zone any motor boat without first having obtained a license to navigate motor boats as in this ordinance provided, such license to be known as a Navigator's License for Motor Boats.

Sec. 3. Any person desiring to navigate motor boats in the waters of the Canal Zone shall first make written application to the Board of Local Inspectors of the Canal Zone, stating his nationality, age, and character of experience in the operation of motor boats and gasoline and electric machinery; and shall also have his application endorsed by two reputable citizens of the Canal Zone or of the cities of Colon or Panama, Republic of Panama, vouching for his sobriety and trustworthiness. The Board of Local Inspectors shall thereupon examine the applicant touching his knowledge of the use of gasoline, gas, naphtha, and other like fluids, and electricity in the operation of motors and machinery, and of the mechanism and operation of motor boats, as well as upon his

knowledge of the English or Spanish language, and upon laws and regulations of the Canal Zone relating to the navigation of the aforesaid waters and to the operation of motor boats and other vessels upon said waters. In order to determine the skill of any applicant, said Board may require him to make a practical demonstration thereof. If the applicant is found to be competent, the Board shall determine whether his knowledge, skill and experience are such as to qualify him for the navigation, in Canal Zone waters, of motor boats of any tonnage, or of those only of less than 15 gross tons each.

Sec. 4. No person shall be granted such license unless he is not less than eighteen years of age, is of sober habits, is able to read either the English or Spanish language, and unless he shall prove to the satisfaction of the Board of Local Inspectors that he has the knowledge, skill and judgment necessary for the safe and skillful operation and navigation of motor boats.

Sec. 5. The Board of Local Inspectors shall meet at Ancon, Cristobal, or at such other points in the Canal Zone as it may designate, at such times as may be convenient to it and to the applicants for such licenses, and shall examine such applicants. The Board shall keep a careful record of all such applications, and of its action thereon, together with any papers submitted in connection with such applications and examinations.

Sec. 6. Upon the completion of an examination as herein provided for, the Board of Local Inspectors shall make a report to the Head of the Department of Civil Administration showing whether the applicant is competent under the provisions of this ordinance to operate motor boats in the waters of the Canal Zone, and if the Board's report is to the effect that the applicant is thus competent, the Head of the Department of Civil Administration shall issue to the applicant a license as follows:

(a) If the report of said Board shows the applicant to be competent to navigate in the aforesaid waters motor boats of any tonnage, the license shall be in form substantially as follows:

THE GOVERNMENT OF THE CANAL ZONE.

NAVIGATOR'S LICENSE FOR MOTOR BOATS OF ANY TONNAGE.

No.

Whereas, it has been reported to me by the Board of Local Inspectors that has given satisfactory evidence that he is a skilled navigator of motor boats of any tonnage, and can be entrusted to perform the duties of Navigator of Motor Boats of Any Tonnage in the waters of the Canal Zone, he is therefore licensed to act as such Navigator until such time as this license may, for cause, be revoked.

Witness my hand this day of 19.....

Head of Department of Civil Administration.
Countersigned:

Chairman, Board of Local Inspectors.

(b) If the report of such Board shows the applicant to be competent to navigate only motor boats of less than fifteen gross tons each, the license shall be in substantially the

same form as the license described in (a), except that it shall only authorize the licensee to navigate in the aforesaid waters motor boats of less than fifteen tons gross each.

Sec. 7. Coincident with the issuance of any navigator's license herein provided for, the Collector of Revenues, upon the direction of the Head of the Department of Civil Administration, shall deliver to the licensee a metal check or badge having stamped thereon the serial number of the licensee's license and the words and letters "Navigator's License, C. Z." It shall be the duty of each person holding such license to wear or carry with him said check or badge when he is operating any motor boat in the waters of the Canal Zone. For such badge and license, each such licensee shall pay to the Collector of Revenues one dollar (\$1), same to become a part of the revenues of the Canal Zone Government. Upon request of any Canal Zone police officer any such licensee, while in charge of any motor boat in the waters of the Canal Zone, shall exhibit such badge. In addition to wearing such badge, the licensee shall have framed and carried on any motor boat which he may be navigating the license issued to him as aforesaid.

Sec. 8. The said navigator's license shall continue in force until it may be revoked for cause, as herein provided for. It shall be unlawful for any person who does not hold a license for the navigation in Canal Zone waters of any motor boat of any tonnage to navigate in said waters any motor boat of fifteen gross tons or over.

Sec. 9. The Head of the Department of Civil Administration is hereby given the right to revoke any license issued under the provisions of this ordinance when it shall appear to him that the holder thereof, because of drunkenness or lack of skill in operating motor boats, should not be further entrusted with the operation of such boats in the waters of the Canal Zone.

Sec. 10. Any person who operates a motor boat in or upon the waters of the Canal Zone without first having obtained a license as herein provided for, or without complying with any other requirement of this ordinance applicable to him, shall be guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not to exceed five hundred dollars (\$500), or by imprisonment in the district jail for not more than six months, or by both such fine and imprisonment, in the discretion of the court.

Enacted by the Isthmian Canal Commission, December 16, 1912.

Approved by the Secretary of War, January 13, 1913.

Band Concert.

A concert will be given by the Isthmian Canal Commission band at Gorgona, C. Z., Sunday, February 9, 1913 at 6 p. m. The program follows:

1. March—*Chateau Gontier*..... Fischlin
2. Selection—*The Rose Maid*..... Granichstaedten
3. (a) —*Simple Avenue*..... Thome
- (b) —*Pilgrim's Chorus from Tannhauser*... Wagner
4. Overture—*Stradella*..... Flotow
5. Popular Song—*Moonlight Bay*..... Wenrich
6. Cornet Solo—*The Holy City* (by request)... Adams
Chas. E. Jennings.
7. Descriptive—*Evening Idyls*—by request.....
Sunset, Evening Festivities, Dreamland.
8. —*Glorsia from 12th Mass.* (by request)... Mozart
9. March—*The Man Behind the Dirt* (new)... Jennings
Respectfully dedicated to the Canal Diggers.

CHARLES E. JENNINGS, Musical Director.

A concert will be given at Culebra, C. Z., February 16 at 3 p. m.

SOCIAL LIFE OF THE ZONE.

Church Notes.

Beginning on Ash Wednesday, February 5, a ten days' mission will be held at St. Ferdinand's Church, Empire. Masses will be said daily. The visiting missionary, the Rev. Father Mulane, will remain on the Isthmus for about one month.

The proceeds of a concert in aid of the altar fund of Christ Church, Colon, which was held on Monday evening, January 27, amounted to \$100. Those who participated in the program were Mrs. Faure, Mrs. Ulrich, Mrs. Lynn, Miss Layland, Miss Holm and the Cecilian Quartette, Mrs. Smith, Mrs. Mears, Mrs. Diers and Mrs. Wilford and Messrs. E. L. and R. S. Mosher, Murchison, Murphy, A. B. Dickson, Folger, and Dr. Godfrey.

Owing to the last day of the carnival falling on Tuesday, February 5, the monthly meeting of the Woman's Altar Guild of St. Luke's Hospital chapel was postponed one week. The meeting will be held at the home of Mrs. C. W. Barber on Tuesday, February 11 at 3 o'clock.

Ancon Study Club.

The Ancon Study Club completed its first year on January 24. The meeting was held at the home of Mrs. White, and an election of officers for the ensuing six months was held. The first month's study, from January 24, 1912 to March 6, was on the history of Panama and the Canal Zone; the study for March, April, and May was Italy, Greece, and Rome, and the Greek and Roman renaissance. In connection with this course there was an exhibit of pictures on March 13. The third course was a study of the operas currently given, including the French, Italian, German, and American works, and from July to December Shakespeare's plays were studied. A three weeks' recess was taken at Christmas, and the meetings were resumed on January 17 when a course in American history was begun. The club has the library formerly belonging to the Ancon Woman's Club, and, in addition to these books, has purchased an encyclopedia and several reference books. At its meeting on January 31, the club voted \$15 for the benefit of the blind boy fund of the Canal Zone Federation of Women's Clubs. The officers are, Mrs. H. C. Shick, president; Mrs. A. O. Mason, secretary and treasurer; and Mrs. Mark White, librarian.

Isthmian Tennis Association Tournament.

The following is the result of the Isthmian Tennis Association Tournament of singles, held at Gatun and Cristobal on January 26:

First Round—Runyan (Ancon), defeated Hart, (Cristobal), 6-4, 6-2.

Pulsifer (Empire), defeated Pearman (Pacific), 6-3, 8-6.

Wells (Gatun), defeated Swartz (10th Infantry), 6-0, 6-4.

Fechtig (Tivoli), defeated Tupper (Culebra), 6-1, 6-3.

Semi Finals—Runyan defeated Pulsifer, 6-2, 6-3.

Fechtig defeated Wells, 2-6, 6-4, 6-2.

Finals—Fechtig defeated Runyan, 6-0, 6-8, 6-2.

The next tournament in doubles will be held at Empire and Culebra on Sunday, February 9.

PERSONAL.

Col. Geo. W. Goethals, accompanied by his wife and Mrs. George R. Goethals, arrived from the United States on the *Colon* on February 3.

Among the other passengers on the *Colon* were Mr. Frank Feuille, returning from an official visit to Washington, Brigadier General Tasker H. Bliss and family, Representatives John Q. Tilson and family and J. L. Hartman and family and Mr. Ray Stannard Baker, of the American Magazine.

Rear Admiral Hugo Osterhaus, Captain W. R. Shoemaker of the Navy, Maj. William Chamberlaine and Captain Charles E. Kilbourne of the Coast Artillery, and Maj. Eveleth E. Winslow of the Corps of Engineers, U. S. A. arrived on the Isthmus on February 3 for an inspection of the Fortification work.

Commission of Fine Arts.

Mr. Daniel C. French, Frederick L. Olmsted, E. H. Blashfield, Charles Moore, and A. B. C. Cammerer, members of the United States Commission of Fine Arts will arrive on the Isthmus on or about February 12. The Canal law of August 24, 1912, contains the following provision:

"Before the completion of the Canal the Commission of Arts may make report to the President of their recommendation regarding the artistic character of the structures of the Canal, such report to be transmitted to Congress."

Obituary.

B. A. Kallish, an employe of the Panama Railroad Company at Colon, died in Colon Hospital on January 29. He was 53 years of age, widower, and had been on the Isthmus 20 years.

Michael J. Mohen, an employe of the McClintic-Marshall Construction Company at Gatun, fell from the center wall, middle lock, at Gatun, on January 29, and received injuries which caused his death. He was 27 years of age, single, and had been on the Isthmus nearly a year. He is survived by his mother Mrs. Elizabeth Mohen, living at Brad-dock, Pa.

Leslie C. Cunningham, an employe of the Mechanical Division at Paraiso, was killed by an engine on the construction track at Pedro Miguel on January 31. He was 26 years of age, single, and had been on the Isthmus nine days, coming from Florida. He is survived by a brother, C. V. Cunningham, living at Tifton, Georgia.

The monthly meeting of the I. O. P. K. will be held at Empire on Saturday night, February 8.

Missing Men.

Anyone having information regarding the whereabouts of Mr. Edward P. Murphy of Worchester, Mass., who is supposed to be on the Isthmus, is requested to communicate with the American Legation, Panama.

New Chapter, I. B. E. W.

Local No. 397 of the International Brotherhood of Electrical Workers was recently installed at Paraiso. Meetings are held at Paraiso Lodge Hall semi-monthly.

The dedication of the United Methodist Free Church in Guachapali district, Panama, has been fixed for Sunday, February 23, at 3 p. m.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The moving picture schedule for the week February 10 to 15, is as follows: Monday, Gorgona; Tuesday, Gatun; Wednesday, Cristobal; Thursday, Corozal; Friday, Empire; Saturday, Culebra.

CULEBRA.

High scores for the week in duckpins are as follows: Steele, 103, 107, 103, 101, 105; Brown, 116, 102, 111, 113; Case, 106, 101; Anderson, 113, 101, 100; Palmer, 114, 109, 101, 105; Dougherty, 108; Kersey, 103, 110; Silver, 101, 101; Durand, 102.

The ladies' team from Cristobal will bowl the local ladies' team on Saturday, February 8.

EMPIRE.

On Wednesday evening, January 29, the basketball team from the U. S. S. Nebraska played the Empire team. This was a game between two champion teams Empire being the champions of the Isthmus and the Nebraska team holding the championship of the Atlantic fleet for the years of 1908, 1909, and 1910. The result was a score of 38 to 41 in favor of Empire. Before the game the Nebraska's band, which accompanied the team, played a number of selections, and during the intermission and after the game several more were rendered.

The athletic meet entry-blanks are now at the desk for all those who wish to enter the Washington's Birthday Meet. Entries must be in to the Clerk of Course by Saturday evening, February 15.

A beginners' Spanish class has recently been started. This class is composed of ladies and meets at 8.30 p. m., on Wednesday and Friday of each week.

The First Aid Class meets every Monday night at 7. Many of the men are attending this class and find it very interesting.

GORGONA.

A duckpin tournament has been arranged for the month of February, with 42 entries. Seven medals will be given, one for high pin fall, second high, and third for the teams; also first, second, and third for singles and one for high average.

The pool tournament closed Saturday evening and Mr. Louden will be awarded the \$3 cue for playing the greatest number of games during the month.

The handball tournament opened on Saturday evening, February 1, Caruthers taking two games from Calloway.

Two hundred and seventy-five people attended the moving picture show on Wednesday night, when Mrs. Kramer sang three solos. Mr. Case will sing at the next entertainment.

The Gorgona Chorus concert which was scheduled for February 14 has been postponed.

The February phonograph records have been received.

GATUN.

A brass band and a basketball team from the U. S. S. Virginia visited Gatun on Thursday evening, January 30. The band concert began at 7.30 p. m. During the evening two match games of basketball were played: "Mosquitoes" vs. "Red Bugs" and U. S. S. Virginia vs. Gatun. In the former game the "Mosquitoes" won and in the latter, the Gatun team.

A male glee club has been organized at the clubhouse. Messrs. Harper and Kohl won pennants given as prizes during January, for high scores in duckpins and tenpins, respectively.

The rag time tenpin tournament closed on January 31. Humphrey and Wurster took first prize and Miller and Barte, second.

The present standing of the ragtime duckpin tournament shows DeMoll and Wurster in the lead with 585; and Wells and Vierbuchen are second with 574.

The high scores for the week ending February 1 are: *Tenpins*—Swallow, 227; Miller, 201. *Duckpins*—Wells, 112, 104, 105, 106, 103, 109; Wurster, 104, 105, 106, 106, 100; DeMoll, 121, 106; Green, 106; Vierbuchen, 101; Claherty, 102.

CRISTOBAL.

On Saturday night the local bowlers took three games from the team from Gatun by the following scores:

Gatun.				Cristobal.			
Wells.....	86	87	76	Barrett.....	96	100	75
DePoorter....	85	104	83	C. Cotton....	92	79	73
Green.....	100	81	83	Collins.....	77	92	102
Humphrey....	81	81	76	Smith.....	97	87	83
DeMoll.....	82	74		Bullard.....	169	81	108
Barte.....			87				

Totals... 434 427 405 471 439 441

Twenty-two men organized a French pool tournament which started the past week. First, second, and third place prizes will be given.

On the night of January 29 the band and basketball team from the U. S. S. Georgia gave a concert and played basketball at the Y. M. C. A. The concert was well attended and the game resulted in a score of 28 to 6 in favor of the Cristobal team.

OFFICIAL CIRCULARS.

The Peninsular and Occidental Steamship Company Rates and Sailings between Key West and Colon.

CULEBRA, C. Z., January 23, 1913.

CIRCULAR No. 175-J:

The Peninsular and Occidental Steamship Co., of Jacksonville, Fla., has inaugurated a special service between Key West and Colon with sailings approximately twice a month each way. The schedule calls for a direct run from Key West to Colon, and returning stops are made at Kingston and Havana, with stop-over privileges at both points if desired. The run from Key West to Colon will consume approximately three days, and from Colon to Key West six days. There follows a list of regular tariff rates, from which a reduction of 20 per cent will be accorded employees of the Commission and the Panama Railroad and dependent members of their families who make their homes on the Isthmus including wives, children, parents, brothers, and sisters.

FARES.

Including meals and berth at sea and in the ports during the entire trip. (No charge for excess baggage.)

	One Way.	Round Trip.
Key West to Colon, Panama Canal Zone	\$ 50 00	\$110 00
Key West to Kingston, Jamaica (via Colon)	85 00	110 00
Key West to Havana, Cuba, (via Colon and Kingston)	105 00	110 00
Colon to Kingston, Jamaica	35 00	110 00
Colon to Havana, Cuba (via Kingston)	60 00	110 00
Colon to Key West (via Kingston and Havana)	70 00	110 00
Kingston to Havana	35 00	110 00
Kingston to Key West (via Havana)	47 50	110 00
Kingston to Colon (via Havana and Key West)	97 50	110 00
Havana to Colon (via Key West)	62 50	110 00
Havana to Kingston (via Key West and Colon)	97 50	110 00

Children between five and twelve years of age will be charged one-half and those under five years of age one-quarter of the above rates. Servants will be carried at a charge of two-thirds the adult rate; meals and berths to be furnished them according to the ship's rules.

The following sailing dates are scheduled for January, February, March and April:

SAILING DATES.

SEASON 1913.		JAN.	FEB.
		Day of month.	Day of month.
Leave	Key West	7	21
Arrive	Colon	10	24
Leave	Colon	12	26
Arrive	Kingston	13	27
Leave	Kingston	15	29
Arrive	Havana	17	31
Leave	Havana	17	31
Arrive	Key West	18	Feb. 1
SEASON 1913.		MARCH	APRIL
		Day of month.	Day of month.
Leave	Key West	4	18
Arrive	Colon	7	21
Leave	Colon	9	23
Arrive	Kingston	10	24
Leave	Kingston	12	26
Arrive	Havana	14	28
Leave	Havana	14	28
Arrive	Key West	15	29

For further information apply to Mr. E. G. Booth, Jr., Agent, Peninsular and Occidental Steamship Company, Colon.

H. F. HODGES,
Acting Chairman.

Timekeeping Forms.

CULEBRA, C. Z., January 24, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

On account of the consolidation of timekeeping in connection with the Departments of Civil Administration and Sanitation, Quartermaster's Department, and the various divisions of the Chief Engineer's Office, it is requested that one extra copy of the following forms be furnished this office for transmission to the Chief Timekeeper:

Increase of Pay- Force.

Notice of return from leave of absence.

Termination of service.

In cases of transfers to and from the Departments of Civil Administration and Sanitation, Quartermaster's Department, and the various divisions of the Chief Engineer's Office, one extra copy of the transfer slip should be furnished the Chief Timekeeper, Culebra, Canal Zone.

When transfers are effected between the Second, Fifth and Sixth divisions, and other divisions of the

Chief Engineer's Office, the usual transfer slips must be furnished.

All transfer slips covering transfers from the different divisions of the Chief Engineer's Office, with exception of the Second, Fifth and Sixth divisions, will hereafter be issued by the personnel division.

H. F. HODGES,

Acting Chairman and Chief Engineer.

Steamship Reservations.

CULEBRA, C. Z., January 28, 1913.

ALL CONCERNED:

Cable advice has been received from the Washington office of the Commission to the effect that accommodations on all steamship lines to the Isthmus are being booked far in advance of scheduled sailings. Employees and members of their families visiting the United States are urgently requested to notify the Washington office of the return sailing date as far in advance as possible, in order that suitable accommodations can be reserved.

H. F. HODGES, Acting Chairman.

Employment on the Corozal Farm.

CULEBRA, C. Z., January 30, 1913.

The Corozal Farm is now able to use whatever men have been disabled in the service and cannot be profitably used by the departments or divisions in which they are at present employed or in which they were disabled. Applications for employment on the farm should be made out on form C. E. 379, a supply of which may be obtained from this office on request.

H. F. HODGES, Acting Chairman.

Typewriter Baseboards and Covers.

CULEBRA, C. Z., January 31, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

Please ship any spare typewriter covers and baseboards that are not needed in your respective offices to Mr. A. L. Robinson, Superintendent Mechanical Division, Gorgona, as these are needed in sending out typewriters which have been forwarded to the repair shop.

H. F. HODGES, Acting Chairman.

Contract for Clearing Trails.

Bids will be received by the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, C. Z., until 2.30 p. m. Wednesday, February 19, 1913, at which time they will be opened in the presence of attending bidders, for the clearing of the following trails: Arraijan-Rio Grande, Arrijan-Cochinito, Gamboa-Cruces, Mount Hope-Majagual. Work shall be done in accordance with the specifications to be obtained upon application to the Superintendent of Public Works, Isthmian Canal Commission, Administration Building, Panama. Proposals may be made for any or all trails. The successful bidder will be required to furnish a bond or to make a cash deposit in the sum of 10 per cent of the amount bid as a guarantee that the work will be performed. The Commission reserves the right to reject any or all bids, or accept any bid as may be deemed to its interest, or to waive defects and informalities in proposals. Proposals should be inclosed in sealed envelopes, marked "Proposal for Clearing Canal Zone Trails," and addressed to C. NIXON, Purchasing Agent on the Isthmus, Mount Hope, C. Z.

Misdirected Letters.

ANCON, C. Z., February 5, 1913.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Becker, Mrs. E.	Kennish, Mrs. H. L.
Bernhardt, Miss Marie (c/o	Lenow, Francis
Mr. Arthur B. Round)	McHenry, Mrs.
Broughton, Mrs. Archie	McKee, Mrs. Amy
Bryant, Fred	Nurse, Caiaphas
Burns, Dan W.	Paletz, Harry J.
Cornwell, Mrs. Eva	Patterson, Miss B. M.
Costalos, Mrs. A.	Peter, John
Curtis, Frank	Piper, Mrs. Jennie
Dill, Teray	Quinn, James
Erbe, Ernest A.	Railsback, Mahlon
Gallagher, William F.	Ruse, Dr.
Godfrey, Miss Mary Jane	Sample, Miss Doll B. (2)
Hamilton, Capt. James	Sehr, Mikel
Hearn, J. W.	Smith, Peter S.
Hickey, John	Stone, Ralph E.
Hider, G. T., Jr.	Wilson, Frederick
Hyder, C. H.	Wilson, Miss Ida
Kennett, Samuel	Wade, Harry A.
Kennedy, Geo. E.	Wyght, Mrs. Walter

Married.

MAEPBERSON-IRVINE—On Saturday, January 25 at St. Luke's Hospital Chapel, Ancon, Miss Martha Irvine to Mr. Hugh Maepberson of Ancon the Rev. Henry A. Brown, officiating.

LOST—On Sunday, January 25, in Ancon between house No. 74 and St. Luke's Church, or between the chapel and house No. 119 a small open face Swiss gun metal watch; no chain or pin. Reward is offered if returned to the office of THE CANAL RECORD.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL

Advance	P. R. R.	Monday	Feb. 3
Panama	P. R. R.	Monday	Feb. 10
Allianca	P. R. R.	Saturday	Feb. 15
Colon	P. R. R.	Friday	Feb. 21
Advance	P. R. R.	Friday	Feb. 28
Advance	P. R. R.	Friday	Feb. 28
Panama	P. R. R.	Friday	Mar. 6
Allianca	P. R. R.	Wednesday	Mar. 12
Colon	P. R. R.	Tuesday	Mar. 18
Advance	P. R. R.	Tuesday	Mar. 25
Panama	P. R. R.	Monday	Mar. 31
Allianca	P. R. R.	Saturday	Apr. 5
Colon	P. R. R.	Saturday	Apr. 12
Advance	P. R. R.	Saturday	Apr. 19
Panama	P. R. R.	Friday	Apr. 25
Allianca	P. R. R.	Thursday	May 1
Colon	P. R. R.	Wednesday	May 7

CRISTOBAL TO NEW YORK

Allianca	P. R. R.	Sunday	Feb. 2
Colon	P. R. R.	Sunday	Feb. 9
Advance	P. R. R.	Saturday	Feb. 15
Panama	P. R. R.	Saturday	Feb. 22
Allianca	P. R. R.	Friday	Feb. 28
Colon	P. R. R.	Thursday	Mar. 6
Advance	P. R. R.	Wednesday	Mar. 12
Panama	P. R. R.	Tuesday	Mar. 18
Allianca	P. R. R.	Monday	Mar. 24
Colon	P. R. R.	Sunday	Mar. 30
Advance	P. R. R.	Monday	Apr. 7
Panama	P. R. R.	Saturday	Apr. 12
Allianca	P. R. R.	Friday	Apr. 18
Colon	P. R. R.	Thursday	Apr. 24
Advance	P. R. R.	Thursday	May 1
Panama	P. R. R.	Wednesday	May 7
Allianca	P. R. R.	Tuesday	May 13

NEW YORK TO COLON.

Trent	R.M.	Saturday	Feb. 1
Tivives	U. F. C.	Saturday	Feb. 1
Prinz Sigismund	H.-A.	Saturday	Feb. 1
Zacapa	U. F. C.	Wednesday	Feb. 5
Prinz Joachim	H.-A.	Saturday	Feb. 8
Sixaoa	U. F. C.	Saturday	Feb. 8
Almirante	U. F. C.	Wednesday	Feb. 12
Prinz Eitel Friedrich	H.-A.	Saturday	Feb. 15
Carrillo	U. F. C.	Saturday	Feb. 15
Magdalena	R. M.	Saturday	Feb. 15
Santa Marta	U. F. C.	Wednesday	Feb. 19
Prinz August Wilhelm	H.-A.	Saturday	Feb. 22
Pastores	U. F. C.	Saturday	Feb. 22

COLON TO NEW YORK.

Magdalena	R.M.	Tuesday	Feb. 4
Santa Marta	U. F. C.	Thursday	Feb. 6
Prinz August Wilhelm	H.-A.	Tuesday	Feb. 11
Pastores	U. F. C.	Tuesday	Feb. 11
Metapan	U. F. C.	Thursday	Feb. 13
Prinz Sigismund	H.-A.	Monday	Feb. 17
Tivives	U. F. C.	Tuesday	Feb. 18
Tagus	R. M.	Tuesday	Feb. 18
Zacapa	U. F. C.	Thursday	Feb. 20
Prinz Joachim	H.-A.	Tuesday	Feb. 25
Sixaoa	U. F. C.	Tuesday	Feb. 25
Almirante	U. F. C.	Thursday	Feb. 27
Prinz Eitel Friedrich	H.-A.	Monday	Mar. 3

NEW ORLEANS TO COLON.

Cartago	U. F. C.	Saturday	Feb. 1
Atenas	U. F. C.	Wednesday	Feb. 5
Heredia	U. F. C.	Saturday	Feb. 8
Parismina	U. F. C.	Wednesday	Feb. 12
Turrialba	U. F. C.	Saturday	Feb. 15
Cartago	U. F. C.	Wednesday	Feb. 19
Abangarez	U. F. C.	Saturday	Feb. 22

COLON TO NEW ORLEANS.

Abangarez	U. F. C.	Thursday	Feb. 6
Parismina	U. F. C.	Thursday	Feb. 6
Cartago	U. F. C.	Thursday	Feb. 13
Atenas	U. F. C.	Saturday	Feb. 15
Heredia	U. F. C.	Thursday	Feb. 20
Parismina	U. F. C.	Saturday	Feb. 22

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers for New York, via Kingston and Santiago de Cuba, sail thus: the *Prinz Joachim* and the *Prinz August Wilhelm* on alternate Tuesdays at 10 a. m., and the *Prinz Sigismund* and the *Prinz Eitel Friedrich* on alternate Mondays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays, at 3 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m.; and Thursdays at 2 p. m.; for Boca del Toro, on Mondays at 5 p. m.; for Limon via Boca del Toro, on Tuesdays at 5 p. m.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, FEBRUARY 12, 1913.

No. 25.

The Canal Record

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**Address all Communications,
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.**

No communication, either for publication, or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Reducing Stock.

The only materials to be purchased on annual contracts this year are lubricants, waste, white lead, red lead, rope, forage, turpentine, kerosene, and gasoline. All other supplies required for the year will be purchased under what are known as emergency contracts. This decision is in line with the policy instituted in 1910 of gradually reducing the stock of materials carried in store on the Isthmus so that when the work is completed there will be the least possible amount to dispose of.

In 1910 all the storehouses on the Isthmus were transferred to the Quartermaster's Department, all storekeepers prepared lists of surplus materials and the surplus stock was concentrated—steamshovel, drill repair parts, and electrical material at Empire; air brake material, lubricators, injectors, car, locomotive and similar materials at Gorgona; and general stock at Mount Hope. Unused materials were collected on all parts of the work and turned into the storehouses. The lists of materials on hand made it possible to make substitutions on requisitions, and to supply from the depots materials that otherwise might have been duplicated in orders upon the United States.

In the fiscal year ending June 30, 1911 an actual reduction in value of stock on hand was made amounting to \$1,183,050.72, although the value of material received during that year from the United States was \$10,051,926.25, not including coal, fuel oil, and miscellaneous purchases on the Isthmus amounting in value to \$2,440,226.40.

The number of annual contracts let in the fiscal year 1912 was smaller than in previous years, and although the value of purchases in the United States amounted to \$10,517,260.77 the reduction in stock was continued. On June 30, 1911 the value of stock on hand was \$5,374,182.24 and on June 30, 1912 this had been reduced to \$3,721,212.90, or by \$1,652,969.34.

The materials to be purchased this year on

annual contracts are only such as will have a continued use after the Canal is completed. The Washington office has been directed to continue the dynamite contract of last year, or to make purchases in the open market, repair parts are being supplied as far as possible from equipment retired from the service, and other parts that can be made economically on the Isthmus are manufactured at Gorgona shops.

Dry Filling Opposite Corozal.

A trestle has been driven across the Rio Grande diversion at the site of the suspension foot bridge, which has been removed, for hauling spoil from the steamshovels south of Miraflores Locks to the flat land opposite Corozal. Dumping in this area is part of the scheme for the reclamation of the swamps between the Panama railroad and the Pacific entrance channel, from Miraflores Locks to Diablo Hill, but this is the first dry fill to be made east of the diversion. Such filling heretofore has been made with spoil from the hydraulic sluicing and dredging plant now shut down. The trestle crosses the diversion on a 10-degree curve and at an upgrade of two per cent, from the old sand track.

New Track to Pacific Locks from Balboa.

In anticipation of interference with the old Pacific Division sand track by the construction of the Balboa terminals, a new track on which unqualified train crews may operate has been laid from Balboa, along the east toe of the abandoned Sosa Dam to Diablo Hill, thence parallel to the Panama railroad and on its right of way to Corozal Junction. At the latter point it diverges from the Panama railroad, connecting with the old construction track leading to Miraflores Locks. This construction affords, as the old sand track did, a clear connection between the Pacific locks and the sand wharf at Balboa, and the rock trains from Ancon crusher use the Panama railroad to the same extent as before.

Gatun Spillway Caisson Completed.

The caisson for the spillway at Gatun has been completed and accepted. It was tested for water tightness by filling it with water, then all of the leaks were noted, and the necessary calking was done to seal the breaks. After that the concrete floor and the wooden decking were placed, and the caisson was painted. The caisson is 49½ feet long and 22½ feet high. It is to be used for the purpose of closing the sluice gate bays of the spillway in case it be desired to make repairs to the gates or their bearings.

Change of Approach to Miraflores Tunnel.

The connections for hauling dirt trains from the south end of Culebra Cut through Miraflores tunnel have been changed slightly from the plans outlined in THE CANAL RECORD of January 15, 1913. Loaded trains

will not use the proposed separate incline to the tunnel but will utilize for the most part the present embankment, slightly extended, for the Panama railroad main line. They will switch from the present Central Division construction tracks about a hundred yards south of Pedro Miguel station and pass up an easy grade on the face of the main line embankment. The incline reaches the level of the main line about a mile north of Miraflores station, and the new track then parallels the single track main line, switching into it about 200 feet north of the tunnel. This construction lessens the amount of filling by about 10,000 yards and avoids the building of a trestle across the Pedro Miguel River.

The rest of the work is being carried out as reported. The 3½ per cent grade for empty trains, returning from the tunnel to the construction tracks, is about half completed. To make way for it the passenger station at Miraflores has been moved and set up on the east side. This allows southbound passenger trains to attain more momentum before steam is shut off for the passage through the tunnel. Signal towers have been erected at each end of the tunnel as part of the interlocking plant which will control the 1,050 feet of single track. Stakes have been driven for the road with which the line will be double-tracked from the tunnel to Corozal Junction, and part of the relatively slight filling and task excavation required for this construction has been performed.

Installing Mechanism for Bascule Span.

The lifting mechanism for the center span of the new bascule bridge at Monte Lirio is being installed without interruption to traffic. Contract for this material was let in April of last year, stipulating delivery within 120 days, which the contractor has not been able to make on account of financial difficulties. The installation is being made by a small force of railroad employees and should be completed within two months if the rest of the material arrives on time.

Ditching Machine Loading Gravel.

The Panama railroad ditching machine, equipped with a ¾-yard dipper, loaded 1,058 cubic yards of gravel at the Matachin gravel pit on February 4. This record is comparable with that of some steamshovels. The engineer was E. Richard.

New Hotel Washington.

It is expected at present that the new Hotel Washington on Colon Beach will be ready for occupancy early in March, though the time consumed in final work and furnishing cannot be foretold with accuracy. The hotel has 90 bedrooms, capable of accommodating about 180 persons. Masonry work for exterior improvements, including the walls flanking the building in front and rear, and the laying of concrete pavements, has been completed

NOTES OF PROGRESS.

(Continued.)

and the lawns are being graded and planted in grass. The monument to Aspinwall, Chauncy and Stevens, the pioneers of the Panama railroad, to which the new hotel belongs, has been placed near the side entrance leading to Bolivar street.

Gatun Dam Spillway.

The concrete work in the Spillway at Gatun Dam is over 96 per cent completed, 216,985 cubic yards, out of a total of 225,000 having been placed at the close of work on February

8. A statement of the amount laid each day last week, and of the total in place, follows:

DATE.	Concrete laid.	Hours worked.	No. mixers used.
	Cu. Yds.		
February 2.....	158	5.5	1
February 3.....	116	4.5	2
February 4.....	94	6.00	2
February 5.....	155	7.00	2
February 6.....	141	6.00	2
February 7.....	86	5.00	1
February 8.....	85	7.00	2
Total.....	835	41.00	
Previously reported...	216,150		
Grand total.....	216,985		

CONCRETE WORK IN THE LOCKS.

Over 97 per cent of the total of 4,446,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on February 8, the amount in place being 4,306,209 cubic yards.

GATUN LOCKS.

Over 95 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on February 8 being 1,953,262 cubic yards, out of a total of 2,043,730. A statement of the amount placed in the locks each working day of the week ending February 8, and of the total, follows; and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers			Large stone.	Total.
	Concrete placed.	Hour worked.	No. of mixer.	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
February 3.....	1,000	16.68	4					1,000
February 4.....	1,460	24.32	4					1,460
February 5.....	1,346	22.42	4					1,346
February 6.....	1,338	22.30	4					1,338
February 7.....	1,364	22.72	4					1,364
February 8.....	1,306	21.76	4					1,306
Total.....	7,814	130.20	4					7,814
Previously reported								1,945,448
Grand total								1,953,262

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 910,329 cubic yards, having been placed at the close of work on February 8. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.
February 3.....				202	19.50	3			202
February 4.....				257	26.50	4			257
February 5.....				256	31.00	4			256
February 6.....				267	26.50	4			267
February 7.....				274	26.50	4			274
February 8.....				231	24.00	4			231
Total				1,487	154.00	3.83			1,487
Previously reported.....								4,493	908,842
Grand total.....								4,493	910,329

MIRAFLORES LOCKS.

Over 96 per cent of the concrete for the system of two twin locks at Miraflores was in place February 8, the total amount on that date being 1,442,618 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.						Mixed by hand.	Large stone.	Total.	SPILLWAY. AUXILIARY PLANT. 1-cubic yard mixers.			Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers				Concrete placed.	Hours worked.	No. of mixers	
	Cu. Yds.			Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.			Cu. Yds.
February 3.....	2,240	47.67	8	43	5.50	1	77	8.00	1			2,360	144	7.00	1	144
February 4.....	2,160	49.33	8				68	7.00	1			2,228	117	6.50	1	117
February 5.....	1,672	43.83	8	17	2.00	1	86	9.00	2			1,775				
February 6.....	1,806	44.00	8				36	4.50	1			1,842	122	7.00	2	122
February 7.....	830	20.50	6				86	14.00	2			916	207	10.50	2	207
February 8.....	878	17.67	6				27	4.00	1			905	162	9.00	2	162
Total	9,586	223.00	7.33	60	7.50	.33	380	46.50	1.33			10,026	752	40.00	1.33	752
Previously reported												3,693				4,073
Grand total												3,693				4,825

Civil Service Examinations.

A supply of the Manual of Examinations for the spring of 1913 has been received.

Examinations for the following-named positions are scheduled to be held probably on March 16: Assistant, Philippine Service; assistant engineer, Reclamation Service; assistant inspector of boilers, assistant inspector of hulls, Steamboat-Inspection Service; clerk, Isthmian Canal Service; copyist topographic draftsman, topographic draftsman, nonappointed Departmental Service; junior engineer draftsman, Engineer Department at Large; forest assistant, Forest Service; forest assistant, Philippine Service; industrial teacher, Philippine Service; junior engineer, Reclamation Service; kindergarten teacher, Indian Service; local inspector of boilers, local inspector of hulls, Steamboat-Inspectors Service; matron, Indian Service; physician, all services; teacher, Philippine Service; veterinarian.

Women will be admitted only to the examinations for copyist topographic draftsman, topographic draftsman, kindergarten teacher, matron, and teacher, Philippine Service.

Some of the optional subjects which may be taken in connection with the assistant, Philippine Service, examination are accounting; auditing of accounts; civil engineering electrical engineering; finance; Spanish language; law; and mechanical engineering.

Applications for the above-named examinations will not be received in this office after February 21; this date will be changed if necessary. Applications should be secured from and filed with this office. In requesting information, the kind of examination desired should be specifically mentioned.

The examinations will be held probably at Empire, in the Commission clubhouse, but the place of examination, and also the date, should be omitted in application forms.

All instructions found in application forms and in the Manual of Examinations concerning an examination desired should be carefully read and understood before filing application. In answering question 4 in applications, applicants must show residence in a State, and county therein, of the United States, up to the time of filing application.

ISTHMIAN CIVIL SERVICE BOARD.

Culebra, C. Z., February 8, 1913.

LOST—In first class coach of Panama railroad train No. 7, Saturday evening, February 8, a 3-A Eastman kodak in leather case. Reward is offered if returned to H. G. Cornthwaite.

EMPIRE-CHORRERA ROAD.

Completion of Canal Zone Portion of Projected Highway.

The highway from Empire to the Canal Zone boundary, built as part of a projected road from Empire to the village of La Chorrera in the Republic of Panama, was brought to completion on January 11. Actual construction had been under way since March 20, 1911; the first survey started on March 1, 1911.

This is the most elaborately constructed and durable of the Canal Zone highways. The distinctive feature about it is a base of telford paving. After the route was brought to first grade, by excavation or fill, the base of heavy rock was laid, like ancient paving, and from 6 to 10 inches thick. A 4-inch macadam cover of 1½-inch rock was laid and rolled on the top of this, and a covering of 2 inches of screen as a binder was spread and rolled. In the other roads which the Commission has constructed in the Canal Zone no telford paving was used, the macadam being laid on a base of natural earth which had been graded and sloped. These roads have given satisfaction under the rather light traffic to which they have been subjected, but are in need of continual repair owing to their foundations not being stable.

In a typical cross section, the Empire-Chorrera road is 24 feet between inner edges of gutters. On each side a berm of earth, about 4 feet across, flanks the macadam which is 16 feet wide and slopes from the center, ¾-inch to a foot. The gutters are a foot wide at bottom, a foot deep, and 3 feet across at the top, the outer side being built with a slope of ¾ on 1. The width of the base through cuts is 30 feet, and on fills 27 feet.

The total length of road constructed under this project is 5 miles and 4,262 feet, extending from a connection with a street in west Empire. The Zone boundary is 6 miles, 1,682 feet from the northwest corner of the concrete platform of the Empire passenger station. Telford paving was laid for 28,505 linear feet, with drains to the side every 50 feet. Two bridges of reinforced concrete were constructed, provided with rubble masonry abutments and wing walls. Bridge No. 1 crosses the Mandingo River about 4 miles west of Empire; bridge No. 2 is across the Rio Piza at a point 5 miles, 600 feet west of Empire.

In addition to the bridges, culverts were constructed at intervals. One hundred and twenty linear feet of 48-inch concrete pipe, and 1,919 linear feet of 18-inch concrete pipe were manufactured on the ground for this use, and 431 linear feet of 12-inch vitrified pipe were imported.

Clearing of timber and brush through the route amounted to 37.88 acres. There were 98,742 yards of excavation and 17,540 cubic yards of fill. Bridges and culverts required 886 barrels of cement, and 9,113 cubic yards of crushed rock were used for concrete and macadamizing.

All labor, except some skilled work in the bridge and culvert construction, was performed by Canal Zone convicts. During the construction of the first mile and three-quarters of road they were quartered at Culebra Penitentiary. On October 5, 1911, they were moved to a stockade near the Mandingo River and 4 miles, 1,500 feet

WEATHER CONDITIONS, CANAL ZONE, JANUARY, 1913.

Rainfall in the Canal Zone for the month of January was generally above normal except along the immediate Pacific coast and over the Upper Chagres basin. Monthly totals ranged from .63 inches at Ancon to 6.71 inches at Colon. The maximum precipitation recorded in one day was 2.32 inches at Colon on January 1. Abnormally cloudy weather with frequent showers prevailed during the last decade of the month. Monthly mean air temperatures were above normal, while there was a general deficiency in atmospheric pressure and wind movement. Approximately average conditions of relative humidity and cloudiness prevailed. The following table summarizes the weather conditions for the month:

STATIONS.	Press're (reduced to mean of 24 hours.)	Temperature				Precipitation				Wind			
		Mean.	Maximum.	Date.	Minimum.	Date.	Mean relative humidity.	Total inches.	Station average.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)
Colon.....	29.875	80.8	87	Jan. 7	72	Jan. 31	82	6.71	4.03	17	10,034	N. E.	30
Culebra.....	29.856	78.7	90	Jan. 8	64	Jan. 4	89	1.57	1.74	6	6,142	N. W.	26
Ancon.....	29.844	80.8	93	Jan. 11	67	Jan. 4	87	.63	.99	8	5,451	N. W.	21

west of Empire, which remained their quarters until the completion of the road, after which they were transferred to a similar stockade at Gamboa. They are now engaged in building the Empire-Gamboa road. During most of the time since March, 1911, the number of convicts had been about 125, but not more than 105 are now at work on the road.

One factor in the policy of road building by the Commission has been the desire to keep the convicts and prisoners employed. Inasmuch as it has not been the practice to use them in competition with paid laborers, road construction has been practically their only work. The Canal Zone part of the road was built with the understanding that the government of the Republic of Panama would continue it to La Chorrera. Up to the present time no construction work has been done by the Republic, but in its *Gaceta Oficial* of January 24, 1913, was published a note of the authorization by the National Assembly of the President to continue the road. Similar authorization was made for the construction of a road from La Chorrera to Arraijan, which lies between the former village and the city of Panama. The road from Empire to the boundary is useful at present principally to the planters and squatters along it. Two miles west of Empire a cattle ranch is developing and beyond the boundary near the end of the road, is a tract on which Canal employes are projecting a townsite.

Balboa Sand Service.

A report of sand shipped from Balboa during January follows:

DESTINATION.	Number cars.	Cubic yards.
Atlantic Division.....	26	650
Central Division.....	42	630
Mechanical Division.....	39	625
Fifth, C. & E. Division.....	1,973	38,211
First, C. & E. Division.....	2	38
Civil Administration.....	2	50
Quartermaster's Department.....	3	75
Panama Railroad Company.....	21	525
Fortifications.....	*316	7,196
Private.....	10	250
Total.....	*2,434	48,250

*Includes two barges.

Central Division Unloaders in January.

During the month of January, the following ladderwood trains and cars were unloaded by the Central Division:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa.....	5†	1,137	23,877
Miraflores.....	2	462	9,702
Gamboa.....	4*	932	19,572
Total.....	11	2,531	53,151

†One unloader worked but two days.

*One unloader worked from the 2nd to the 11th incl.

Rainfall from January 1 to 31, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	.23	6	.63
Balboa.....	.27	6	.78
*Miraflores.....	1.01	27	2.65
Pedro Miguel.....	.46	23	1.10
Rio Grande.....	.86	23	2.09
<i>Central Section—</i>			
Culebra.....	.56	8	1.57
*Camacho.....	.45	8	1.60
Empire.....	.86	8	1.67
Gamboa.....	.91	28	2.65
*Juan Mina.....	.55	28	1.01
Alhajuela.....	.77	28	.96
*El Vigia.....	.29	27	.78
*Gorgona.....	.86	24	3.17
*Frijoles.....	1.70	28	3.85
*Trinidad.....	.67	28	3.45
*Monte Lirio.....	1.60	28	3.57
<i>Atlantic Section—</i>			
Gatun.....	1.71	28	4.63
*Brazos Brook.....	1.60	3	5.72
Colon.....	2.32	1	6.71
Porto Bello.....	1.49	31	5.84

*Standard rain gauge—readings at 5 p. m. daily. Automatic rain gauge at unstarred stations—values midnight to midnight.

Rainfall from February 1 to February 8, Inclusive.

STATIONS.	Ins.	Ins.
<i>Pacific Section—</i>		
Ancon.....	.04	1
Balboa.....		
*Miraflores.....		
Pedro Miguel.....		
Rio Grande.....		
<i>Central Section—</i>		
Culebra.....	T	8
*Camacho.....		
Empire.....		
Gamboa.....		
*Juan Mina.....		
Alhajuela.....		
*El Vigia.....		
*Gorgona.....	.02	8
*Frijoles.....	.11	1
*Monte Lirio.....	.10	2
<i>Atlantic Section—</i>		
Gatun.....	.06	1
*Brazos Brook.....	.06	7
Colon.....	.91	1
Porto Bello.....		

*Standard rain gauge—readings at 5 p. m. daily. Automatic rain gauge at unstarred stations—values midnight to midnight. †To 5 p. m., Feb. 7.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, February 8, 1913. All heights are in feet above sealevel.

DAY AND DATE.	Vigia.	Alhajuela.	Gamboa.	Gatun Lake.
Sun. February 2.....	126.8	93.0	48.4	48.4
Mon. February 3.....	126.4	92.6	48.6	48.5
Tues. February 4.....	126.3	92.6	48.6	48.5
Wed. February 5.....	126.2	92.4	48.6	48.6
Thurs. February 6.....	126.1	92.4	48.7	48.6
Fri. February 7.....	126.1	92.3	48.7	48.7
Sat. February 8.....	126.0	92.3	48.7	48.7
Height of low water to nearest foot.....	125.0	91.0	44.0	

LOST—On the 11 p. m. train from Panama on Sunday, February 2, a 1A Graflex camera. Reward. Owner's name on case. Box 284 Gatun.

COAL AND OIL.

Abstract of Plans to Encourage Maintenance of Private Supplies.

An outline has been made of the policy to be pursued by the Government with regard to private coal and fuel oil depots on the Isthmus, for the purpose of supplying ships passing through the Panama Canal. The following is an abstract:

It will be the policy of the Government to keep complete control of the terminals, water frontage, and transportation by land and water across the Isthmus, and to this end no land, nor land under water, near the terminals that may later be needed by the United States will be leased. It will not be the policy to attempt to monopolize the fuel business, and every means will be taken to encourage the establishment of private coal and oil depots on the Isthmus under proper conditions. It is believed that the duplication of plant for private coal and oil stations is undesirable, and therefore the Government plants are being so laid out as to afford ample wharf room, and to provide modern coal handling machinery for unloading colliers into the coal pile and reloading coal to lighters or barges. An outline of the plants to be provided was published in THE CANAL RECORD of January 29, 1913.

Coal—A certain ground area will be set aside for the storage of coal by individuals or companies, and this area will be served by the Government handling machinery with the same effectiveness as coal in the Government storage basin.

This arrangement will obviate the necessity of any dredging, wharf construction, or purchase of coal handling machinery by private owners and companies, and at the same time will enable them to obtain the benefits of the rapid coal handling machinery to be purchased by the United States. It is to be expected that the cost of taking coal in and out of storage, and of the wharfage facilities and dredging thus availed of, will be apportioned at a reasonable price per ton to all individuals and companies alike on an equitable basis. For the area to be occupied by the coal pile a rental charge based upon the cost of fitting up the area for private coal storage would have to be charged in addition. Assurance of satisfactory service can be given by the Canal authorities. It is expected that the Government coaling plant will be in operation before January 1, 1915. Suitable temporary arrangements will be made to take care of any business originating before the permanent plant is completed. Such a permanent plant will require no outlay for improvements on the part of individuals and companies, and will enable them to participate in the coal business on what appear to be more advantageous terms than if they should each proceed with the construction and installation of their own docks and coal piles and coal handling machinery.

Oil—After the completion of the coaling plants, a permanent installation for fuel oil will be made in connection with them, to the extent that piping and pumping plants will be installed. All that will remain therefore for oil companies and dealers to do will be to obtain a revocable license for land on which to construct their oil tanks, and to run pipe lines to the oil wharves and pumps, which will be used for all oil vessels alike, including the vessels carrying oil for the United States.

This will render the exclusive occupancy or assignment of any water frontage at either terminus of the canal to an individual or company unnecessary. The individuals or companies will be charged a uniform and equitable rate per barrel of oil for pumping oil to and from the water front to their tanks.

The pumping of oil across the Isthmus after the Canal is opened will doubtless be economical and therefore necessary, and it is considered that it will be desirable for the United States to control oil transportation across the Isthmus in pipes, the same as other forms of transportation. More than one pipe line across the Isthmus will not be necessary to handle the business. The ownership of this pipe line will be in the United States and it will be considered a common carrier available for the use of all individuals and companies on an equal basis at an equitable charge. This will tend to reduce the selling price of fuel, and place all individuals and companies on the Isthmus on a uniform basis.

Lighterage—The United States will maintain a large number of coal and oil lighters at each terminus of the canal, and it is believed that it will be able to make a price to private individuals and companies on the lighterage of coal that will be so advantageous that they will not want to purchase and maintain additional barges.

Temporary Oil Plants—It is proposed to fit up on Docks 13 and 14 at Cristobal oil pumps and pipe lines in duplicate for use until the permanent plants are installed. A similar temporary plant will be installed at Balboa.

Taxation—Any taxes levied in connection with private coal and oil plants will have two purposes in view for the interest of the Canal: First, to reduce the unnecessary duplication of plant; Second, to encourage the carrying of large stocks of coal and oil. There will be a tax based upon the cost of improvements which would enable revenue to be derived in proportion to the investment made, which will probably be one per cent per annum on the cost of the improvements.

Inasmuch as the storage of a large amount of coal and oil on the Isthmus should be encouraged, a tax similar to the present merchandise tax would not be satisfactory, as it would tend to discourage the same. In lieu of this tax therefore a tax of about one per cent on the sales of coal and fuel oil by individuals and companies will be levied. This

tax will probably be one and one-quarter cents per barrel of oil and five cents per ton of coal of 2,000 pounds.

Application for Privilege—All individuals or companies applying for coal and oil privileges on the Isthmus must furnish satisfactory evidence to the Canal authorities of their ability, financially and otherwise, to conduct the business they wish to undertake.

Navigators of Motor Boats.

Examinations of persons applying for licenses as navigators of motor boats, under the Ordinance enacted December 16, 1912, and approved by the Secretary of War on January 13, 1913, as published in THE CANAL RECORD of February 5, will be held by the Local Board of Inspectors at the following places on the dates named, at 8 a. m.: Administration Building, Ancon, February 17 and 19; Collector's Office, Cristobal, February 18 and 20. Applicants are required to have their applications fully made out, including endorsements. Blanks can be secured by application to the Local Board of Inspectors, Ancon.

W. G. COMBER,

Chairman of Local Board of Inspectors.

Red Cross Finances.

A statement of the finances of the Canal Zone Chapter American National Red Cross for the month of December, follows:

		RECEIPTS.	
Jan. 1	On Hand.....	\$2,056.48	
7	Sale of Christmas seals.....	402.23	
29	Donation by Miss Agnes G. Detour and Mrs. Eleanor Smith Albin.....	60.15	
31	Membership dues....	11.00	
			\$2,529.86
		DISBURSEMENTS.	
Jan. 4	Relief of wife of Zone prisoner, Culebra..	\$ 5.00	
24	Incidental expenses, Cristobal.....	1.90	
24	Postage.....	2.00	
			8.90
Jan. 31	Balance on hand.....		\$2,520.96
		JOHN L. PHILLIPS,	
		C. A. DEVOL, Chairman.	
		Treasurer.	

International Brotherhood of Steam Shovel and Dredge Men.

Local No. 19, I. B. of S. S. and D. M. will hold its monthly meeting on February 16, at 12.10 p. m., at Empire Lodge Hall. All members are requested to attend.

HOSTLING COSTS.

The average labor cost of hostling at all locations during December was the lowest yet reached; and the record for least cost at any one place is held by Las Cascadas. The report of hostling costs in December follows:

Location.	Total equipment Hostled.	Average Labor.	Total Labor.	Material and Service.	Total Expense.
Las Cascadas.....	1,624 Locomotives 93 Others	.606	\$1,039.69	\$321.38	\$1,361.07
Balboa.....	576 Locomotives. 208 Others.	.669	525.16	86.76	611.92
Pedro Miguel.....	3,770 Locomotives 63 Cranes. 225 Others.	.681	2,766.73	450.01	3,216.74
Gatun.....	778 Locomotives. 62 Cranes.	.717	602.01	360.53	962.54
Gorgona.....	226 Locomotives. 213 Cranes. 3 Others.	.826	365.37	193.97	559.34
Totals.....	6,974 Locomotives. 338 Cranes. 529 Others.	.676	5,299.16	1,412.65	6,711.81
Gatun—Miscellaneous.....	40 N. G. Locomotives. 49 Cranes. 293 Others.		316.20	49.44	365.64

CULEBRA CUT.

October Set as End of Dry Excavation.

Dry excavation in Culebra Cut will be carried forward in accordance with the following program:

The lake level will be brought up to plus 50 by July 1, 1913. On and after July 1, the lake will be permitted to rise continuously, and steamshovel work in the Cut can continue as long as the height of the Gamboa dike will suffice to hold back the water of the lake. The top of the dike is about elevation plus 78. Inasmuch as with a season of average rainfall, an elevation of plus 74 may be expected to be reached about October 10, the dry excavation may be continued in the Cut until October 1, 1913. It may be necessary to flood the cut at any time thereafter. This program has been laid out so as to obtain a lake elevation of 85 feet above sealevel on December 1, 1913, and in accordance with it, Gorgona Shops will be flooded out about September 15.

On February 1, there had been dug out of Culebra Cut 88,592,307 cubic yards of rock and earth, and there remained to be excavated approximately four million cubic yards not including present slides. The work is now practically confined to three out of the nine miles of the Cut.

On the south end the excavation is completed from Pedro Miguel Locks north to a point beyond Paraiso, except that the widening of the canal immediately north of the locks to make an anchorage basin will not be completed for about two months, and that the incline on the east side at Paraiso, up which spoil is hauled out of the Canal, cannot be removed until the steamshovel work is over. On the north end the completed section extends from the Chagres River to a point near Empire. In both of these sections there is a small amount of cleaning up to be done, but this is unimportant. The six miles of canal represented in these two sections are practically completed.

The section in which the work is being carried on is that between stations 1680 and 1845, that is, from a point near Empire, one fourth mile south of the angle at Cunette, to a point near the old hamlet of Cucuracha, about one half mile north of Paraiso. This includes the channel in front of Empire, Culebra, Rio Grande, Gold and Contractors' Hills, and a short distance south. In accordance with the original plans the work is being prosecuted so as to keep the highest point in the Cut somewhere about half way between the ends to assist in drainage, and to make it possible for loaded spoil trains to run down grade in going through the Canal. The summit in the pioneer or lowest cut is now between stations 1762 and 1769, about opposite the administration building at Culebra, and here the excavation is down to 61 feet above sealevel, 21 feet above the bottom of the Canal. From there it slopes gradually on both sides to the bottom at 40 feet above sealevel. The drainage is continued as heretofore, through the main culvert of Pedro Miguel Locks on the south end, and into the sump at Gamboa at the north end whence it is pumped into the Chagres.

At present 37 steamshovels are at work, and when emergency demands some of them are run on double shift, making twelve hours a day. Recent instances of this are two shovels at work on the slide opposite Empire, and

two on Cucuracha slide. The daily excavation in January averaged over fifty thousand cubic yards, and this is being maintained at the present time. The equipment engaged in hauling the spoil includes 124 locomotives 1512 flat cars of 19 yards capacity, 199 steel dump cars of 17 cubic yards, and 136 dump cars of 10 cubic yards capacity.

Digging has not increased in difficulty as the bottom is neared, and the use of dynamite has become increasingly economical. At present the hardest material to blast is the cemented gravel met with opposite Empire, where it is necessary to follow the primary or deep blasting with surface or "doby" shots in order to break the material into sizes that can be handled by steamshovel. The trap rock encountered in the Gold Hill dike, the face of which is about 1,000 feet long on the Canal, is very hard, but requires less surface blasting than the cemented gravel does. At all other points the material requiring blasting is soft rock that crumbles readily under the force of the initial explosion. In blasting work 359 drills are employed, and in January 396,250 pounds of dynamite were used; about 0.35 pounds per cubic yard of material excavated.

THE SLIDES.

Although there is nothing new in the manner of the development of the slides on either bank of Culebra Cut, they have shown unexpected activity during the past few weeks. The theory once held, that these movements of the banks towards the Canal were more likely to occur in the rainy season than in the dry, was abandoned a year ago when the most notable slides of the year occurred in the dry season. The latest movement of a large amount of material occurred on the night of February 4, when a pocket of earth and loose rock on the east bank opposite Hodges Hill at Culebra settled downward and moved 80 feet into the Canal. The movement began about 9 o'clock and continued two hours, in which time the bank sank in places as much as 60 feet. The break is 1,000 feet long across the face towards the Canal, and extends back 680 feet from the face of the bottom slope to a point near the relocated highway between Empire and Panama. In its area is a section of the Obispo Diversion, which is merely a shallow ditch at this place, however, whose relocation will not be necessary. Half a dozen drills were caught in the moving material, but only two of them were wrecked. A steamshovel was moved towards the center of the Canal, and three railroad tracks were temporarily blocked. The break in the bank that indicated a probable slide at this point was noted two months ago, but the movement was unexpected at this time. Apparently it is like a large number of other slides, merely a loose mass of rock and earth moving on an underlying surface of rock that dips towards the Canal. The toe of the slope having been dug away, the mass moved of its own weight. It is estimated that two million cubic yards are in motion here, although this is largely conjectural, because it is not known on what slope the material is moving. Two steamshovels are digging out this slide.

A survey of the old slide at Cucuracha, which has resumed activity recently, was made last week. It is estimated that from two to three million cubic yards of material are now in motion here, but this also is sub-

ject to the qualification made above. On the other hand it is not believed that all of this material will move into the Canal. Five steamshovels are now at work there. One day last week one of these was put out of service temporarily when the material it was digging flowed about it and covered the loading tracks. It was extricated within 24 hours, and is again at work. Incidents like these have become part of the day's work in Culebra Cut. They no longer cause surprise and the men have become so accustomed to meeting such emergencies that delays on account of them are continually growing less.

A 95-ton steam shovel is being so altered that it can lift spoil 21 feet above the track on which it is standing and load it into cars. This is necessary for the purpose of handling material to advantage in Cucuracha slide.

The bench on which the shovel will work through the sliding material is 40 feet above sea level, and it is necessary for it to load upon cars that are on a bench 57 feet above sealevel. The floor of the flat car is three feet above the track, so that the total lift is 20 feet. Shovels of this class now load 17 feet above the level of the track on which they stand. The alterations consist of extending the boom 21 inches by adding two 15 inch I beams, and arranging the sheaves upon them as sisters instead of tandem, as at present; lengthening the dipper stick six feet making it 24 feet 6 inches long; and fixing upon it a 3-yard instead of a 5-yard dipper.

At the slide in front of Culebra on the west bank, the shovels have dug away the toe up to the line of the Canal channel, but it is not believed that this will hold. The work of lightening the mass from the top is advancing. The material is very soft and has practically no cohesiveness. Farther north, on the face of the hill upon which stands the residence of Colonel Hodges, the big slide of a year ago seems to be stationary. The toe of this slide has been dug out up to the channel and the material seems to be sufficiently cohesive to maintain itself.

Opposite Culebra on the east bank of the Canal is a wall of grey rock upon which is a bank of clay in places fifty feet deep. A steamshovel is digging away this mass of clay with the purpose of making a bench or terrace on top of the rock; and after this is accomplished the slope of the rock face will be made less steep. The advisability of moving this clay, by sluicing it into the ravine behind the north spur of Gold Hill, is under consideration.

The slide at Cunette which necessitated the relocation of the Obispo Diversion at that point is being dug out by one steam shovel, and it is believed that the channel will be free from all spoil from this source by the end of the dry season.

Panama-Pacific Exposition Stamps.

An error, in designating the picture on the two cent stamps in the Panama-Pacific Exposition commemorative series as "Gatun Locks" when it really represented Pedro Miguel Locks, has led the Post Office Department to destroy all of the stamps thus printed, about twenty millions. The new stamps will bear the words "Panama Canal," under the picture of Pedro Miguel Locks. The one cent, five cent, and ten cent stamps are on sale in the United States, and the new two cent stamp will soon be added.

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

The Empire Woman's Club held an exhibition of pictures at the clubhouse on February 6. Besides the copies of the old masters and the note books belonging to the Canal Zone Federation of Women's Clubs, there was an exhibit of water colors by Mrs. E. H. Ash, formerly president of the Empire Woman's Club. During the afternoon, several duets for violin were played by Miss Jessie Smith and Miss Juanita Pearson.

On February 27, there will be an open meeting of the Gatun Woman's Club under the educational department, Mrs. Gabler, chairman, when the Federation pictures will be exhibited.

At the general meeting of the Cristobal Woman's Club, on February 5, Dr. M. E. Connor delivered an address on "Modes and Sources of Infection." At this meeting the resignation of the president, Mrs. J. L. Storla was tendered, owing to her removal from the Isthmus, and the first vice-president, Mrs. Carl H. Elliott, was elected to fill the office for the remainder of the year. Meetings to follow for the month are as follows: February 12, Home Department, Subject, Home Life in the Colonies; February 19, Art and Literature Department, subject, "Well known Women Writers;" February 26, board meeting in the clubhouse at 9 a. m.

Church Notes.

The services during Lent at St. Luke's Hospital Chapel, Ancon, will be on Wednesday morning at 9 o'clock. The regular Sunday services will be maintained; Celebration of the Holy Communion at 7 a. m., Sunday School at 9 a. m., and Divine service at 10 a. m. The Woman's Altar Guild will hold weekly meetings during Lent on Tuesday morning at 9.30 o'clock; the first of these is to be held at the Tivoli Hotel on February 18, with Mrs. DeKanstein as hostess.

At St. Mary's Church, Empire, services will be held on Friday evenings at 7.30 p. m. A brake will run from Culebra and Empire on Friday evenings during Lent for the accommodation of those wishing to attend the services at St. Mary's Church, and the mission services that are being conducted at St. Ferdinand's. The brake will leave Culebra station at 7 o'clock and returning will arrive in the village at about 9.30 o'clock.

The Woman's Guild of Christ Church, Colon, will hold weekly meetings during Lent at the homes of members. The work planned is the making of new cotters for the choir boys.

On Sunday, February 9, the visiting preacher at Christ Church was the Rev. W. A. Robinson, of England who is on his way to Belize, British Honduras, to take up duty there under Bishop Farrar.

The Woman's Missionary Society of Empire, held its monthly meeting at the home of Mrs. Philip Kelly on Friday, February 7, when there were thirty present. The study consisted of the second lesson on the book, Mormonism; the Islam of America, by Bruce Kinney. Mrs. Kelly read a paper illustrative of the subject and Mrs. Goolsby read a paper on politics and Mormonism.

The lesson at the Fidelity Bible class Empire, on Sunday February 11, was led by Mrs. Stephan Witt, the founder of the class, the subject being Faith.

The Gatun Mission Study Society began

the new work on Mormonism at the meeting on Friday, February 7. The meetings of the club are held at the home of Mrs. Witt.

British and Foreign Bible Society.

The annual report of the work of the British and Foreign Bible Society in the Canal Zone and on the Isthmus of Panama has just been issued. It shows a large circulation of bibles throughout the territory for the year 1910-1911. The year's work began with a stock of 747 bibles, 1,481 New Testaments and 5,053 Gospels, a total of 7,281 books containing the whole or portions of the Scriptures. From London there were received 4,877 bibles, 2,137 New Testaments, a total of 7,014 books; this brought the total stock up to 14,295 books, the largest ever carried on the Isthmus. There were issued from the society's depot 3,986 bibles, 1,691 New Testaments and 3,251 gospels, a total of 8,928 books. Of this number, 3,055 were given away, and the remainder were sold at nominal price. The cash receipts for the year amounted to \$1,266, and the total expense incidental to the circulation was \$3,588, the deficit of \$2,321 being met by the society. For two and one half years the British and Foreign Bible Society has maintained a depot and an agent on the Isthmus, and during this time the circulation has reached a total of 13,313.

At its headquarters in England, the Society publishes the scriptures in more than four hundred languages. It maintains more than one thousand representatives throughout the world. Since its foundation in 1804, it has issued 222,000,000 copies of the scriptures and has expended over \$78,075,000.

Commission Band to be Discontinued.

The Isthmian Canal Commission Band will be discontinued on March 1. It was organized in September, 1905, as a private organization, and the Commission appropriated \$600 to buy instruments. On March 27, 1907 the Commission authorized the employment of a director at \$2,000 a year, a librarian at \$1,500, and 35 men at \$25 a month each. It has given a concert at one of the Canal villages each Sunday since it became an official organization.

A concert will be given by the Isthmian Canal Commission Band, on the porch of the Administration Building, Culebra, C. Z., on Sunday, February 16, 1913, at 3 p. m. The program follows:

1. March—*2nd Regt. Conn. N. G.* Reeves
2. Selection—*The Rose Maid* Granichstaedten
3.—*Pilgrims Chorus from Tannhauser*. Wagner
4. Overture—*Mirilla* Gounod
5. Popular song—*Moonlight Bay* Wenrich
6. Intermezzo—*In the Shadows* Finch
7. Descriptive—*A Soldier's Life* Keler Bela
Approach of night; the serenade; tattoo and march; the prayer before the battle; finale.
8. Potpourri—*The Sunny South* Lampe
9. March—*The Men Behind the Dirt* (new) . . . Jennings
Respectfully dedicated to the Canal Diggers.

(CHARLES E. JENNINGS, Musical Director.)
A concert will be given at Hotel Tivoli, Ancon, on February 23, at 8 p. m.

Tennis Tournaments.

The doubles tournament held at Culebra and Empire, on Sunday, February 9, resulted as follows:

Preliminaries—Gatun (Neeley and Wheeler), defeated Empire (Pulsifer and Wechsler), 6-2, 6-2.

Pacific (Pearman and Snyder), defeated Tivoli (Ohlson and Tannehill), 6-1, 6-2.

Ancon (Ross and Earhart), defeated Culebra (Goethals and Tupper), 7-5, 6-2.

Cristobal (Hart and Farquharson), defeated Camp Otis, 6-4, 6-0.

Semi-finals—Gatun defeated Pacific, 2-6 7-5, 7-9.

Ancon defeated Cristobal, 6-2, 6-4.

Finals—Ancon defeated Gatun, 6-8, 6-4, 6-3.

An allcomers tournament in singles will be held at Ancon, on Washington's Birthday, February 22, and Sunday, February 23. This tournament is for the Isthmian Championship, and is open to all members and clubs affiliated with the association. Entrance fee for this tournament is \$1.00 for each player; this must be in the hands of the secretary, H. E. Ruckert, Gatun, not later than February 19.

Fire at Toro Point.

A fire occurred at Toro Point early in the morning of February 6, completely destroying two four family Commission quarters. The occupants of the second floor quarters had a narrow escape, and three of them sustained bruises through the breaking of the ladder by means of which they were rescued. An adjoining house was damaged. The loss to the Commission is estimated at \$11,326; and the losses of the occupants, who had no time to remove their effects, at \$3,900.

Canal Zone Rifle Club.

At an informal shoot held on Sunday morning, February 2, the members of the Canal Zone Rifle Club defeated the Marines by eight points, 988 to 980.

A three-cornered match may be arranged between the Tenth Infantry, U. S. Marines, and the Canal Zone Rifle Club.

PERSONAL.

Col. C. A. Devol, accompanied by Mrs. Devol, sailed for the United States on February 9, on the *Colon*, on leave of absence.

Obituary.

Mr. T. J. Mulligan, an employee of the McClintic-Marshall Company at Gatun, died in Colon Hospital on February 2. He was twenty-six years old, single, and had been on the Isthmus three months, coming here from New York. He is survived by his sister, Mrs. M. P. Baron, living at Baton Rouge, La.

Married.

LUCEY-CAUGHLIN—On January 14, at Rochester, N. Y., Miss Alice Veronica Coughlin, of Rochester, N. Y., to Mr. William J. Lucey of Pedro Miguel, Canal Zone Residence, Pedro Miguel.

Misdirected Letters.

ANCON, C. Z., February 5, 1913.

The following insufficiently addressed letters originating in the United States or its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Andre, Joe O.	Jordan, Frank E.
Andrus, A. G.	Kelly, Richard L.
Boyce, Joseph H.	Kelso, Joseph N.
Bullock, Albert	Kussman, Harry
Bullock, Oliver	Leith, James
Carson, Rev. H. R.	Overholtzer, L. S.
Cooper, J. M.	Pemberton, Mrs. Rex
Davis, W. Geo.	Pentz, Artemus W.
Dodds, James	Placid, Jose
Emelio, L.	Rand, James J.
Fajai, Alejandro	Sandiford, Clifford
Folcey, Arthur E.	Shaw, Miss Mildred
Gittens, Thorington	Sperro, D. (2)
Gouinlock, Miss Agnes	Spooner, Orin E.
Gouinlock, George	Thompson, Charlie
Hall, Mrs. H. W.	Toon, Beverly
Hart, Geo. Wm.	Vaughn, Kennard
Hudson, Peter	Wade, H. C.
Jackson, Byron	Williams, J. T.
Jackson, Mrs. Nora	Williams, Daniel A.
Jendras, Frank	Wilson, Chas. A.
Jones, Wm. A.	Wright, Dr. T. B.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

Visit of the Atlantic Fleet.

Twelve thousand six hundred and seventy-eight officers and men from the Atlantic Fleet were served with sandwiches, fruit and lemonade on the fifteen special trains that carried the members of the fleet across the Isthmus at various intervals from January 13 to February 8.

These lunches were served under the direction of the Y. M. C. A. at cost. The force of waiters was organized from among the colored attendants at the various clubhouses along the line. These men prepared the lunch at the Cristobal clubhouse in the evening and served the same on the train after leaving Culebra the next day. Fully 26,000 sandwiches were prepared.

As many secretaries as could be spared acted as guides on the special trains, explaining the various points of interest along the line. Bureaus of information were established at the Cristobal clubhouse and in the old administration building at Panama.

Band concerts were given by the bands from the Georgia, Virginia, Nebraska, Idaho, Ohio, Minnesota, Utah and Michigan at various clubhouses and each of these vessels sent basket ball teams that competed with the team from the local clubhouse. One of the most interesting bands was that of the U. S. S. Georgia which, with the exception of the leader, was composed entirely of Filipinos.

On Friday, February 7, 100 members of the Boys' department spent the day on the U. S. S. Ohio, where they were given luncheon and were entertained by the officers and men.

GENERAL.

The moving picture schedule for the week February 17 to 22, is as follows:

Monday, Corozal; Tuesday, Culebra; Wednesday, Empire; Thursday, Gorgona; Friday, Gatun; Saturday, Cristobal; Friday, Porto Bello.

COROZAL.

The new floor in the assembly hall has been completed and the bowling alleys refinished.

A "smoker" will be given on Friday night, February 14.

CULEBRA.

On Thursday night the Empire duck pin team visited Culebra; the following scores resulted:

Empire	Culebra.
Sawtelle.... 79 84	Palmer..... 86 79
Kosier..... 81 86	Barnes..... 79 79
Driedrick.... 82 84 90	Dougherty.. 88 81 81
Leon..... 87 111 80	Steele..... 82 82 92
Gustavson.... 92 98 85	Silver..... 90 84 93
Hentry..... 100 94 105	Case..... 77 125 77
Totals.... 440 471 446	423 451 422

On Saturday night, the Cristobal married folks duck pin team visited Culebra, the ladies bowling the Culebra ladies' team and the men bowling a Culebra team:

Cristobal.	Culebra.
Mrs. Bell..... 76 74	Mrs. Hobbs.... 60 72
Mrs. Landers... 81 69	Miss Westman.. 62 67
Mrs. Weston.... 66 80	Hayes..... 72 67
Mrs. Cotton.... 67 70	Dunlap..... 72 74
Mrs. Burns..... 73 72	Mrs. Dougherty. 31 57
Totals..... 362 365	297 337

Bell..... 78 88	Hobbs..... 74 83
Landers..... 74 68	Silver..... 84 111
Barrett..... 94 90	Johnson.... 83 70
Cotton..... 82 84	Perkins..... 73 74
Burns..... 80 82	Dougherty.... 87 84
Totals..... 408 412	401 422

High bowling scores for the week are as follows: Brown, 107, 111; Silver, 100, 111; Steele, 106, 104, 113; Palmer, 101; Dubois, 101; Dougherty, 103; Warner, 115; Durand, 115; Barnes, 122, 103; Case, 125, 114.

EMPIRE.

Mr. F. A. Gause, superintendent of schools, will deliver an address on Abraham Lincoln at the Empire Y. M. C. A. Sunday evening, January 16. There will be music by a small orchestra.

February 6 the basketball team and the band from

the battleship *Minnesota* entertained the people of Empire; the basketball game resulted in a score of 38 to 24 in favor of Empire.

The married folks tenpin bowling tournament which was begun Friday evening, February 7 had an entry of ten couples, five of whom bowled on Friday evening. The scores were as follows:

	1	2	3	Total
Mrs. J. E. Johnson.....	150	105	117	
Mr. J. E. Johnson.....	127	173	137	809
Mrs. J. W. Whaler.....	96	90	110	
Mr. J. W. Whaler.....	128	168	213	805
Mrs. T. M. Drake.....	132	110	134	
Mr. T. M. Drake.....	131	119	134	742
Mrs. H. W. Sawtelle.....	61	74	97	
Mr. H. W. Sawtelle.....	133	126	168	656
Mrs. L. J. Fabian.....	110	119	86	
Mr. L. J. Fabian.....	106	88	94	603

Prizes will be awarded for first and second place in team score and for the lady making the high single score.

The Gorgona duckpin bowling team were the guests of the Empire team on Saturday, February 8. Empire won two out of three games, the scores were:

Empire.....	459	459	440	Gorgona....	471	408	414
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GORGONA.

A band concert was given by the band from the Idaho and a basketball game was played between the Idaho and Gorgona Y. M. C. A.; on Friday night; the score 11 to 24 in favor of Gorgona.

A local wrestling tournament was held at the Y. M. C. A. of Gorgona on Saturday evening, February 8 when three classes were represented, the heavyweight, middleweight and lightweight. The heavyweight, Nowick won by default; in the middleweight Robinson and Hennan, first bout 7 minutes and the second bout 5 minutes, Robinson won; in the lightweight Quinn, Morrison, and Edwall; Edwall drew bye. Quinn and Morrison first bout, 1 minute and 15 seconds, second bout 8 minutes and 40 seconds both won by Quinn. In the finals with Edwall and Quinn, first bout, 5 minutes, Quinn won, second bout, Edwall won in 11 minutes and third bout Quinn won in 6 minutes and 36 seconds. Medals will be presented to the champions.

High scores for the week in duckpins are as follows: Davis, 104, 108, 102, 101, 100, 102, 100, 101, 107, 106, 103; King, 111, 117, 117, 100; Sims, 107, 107, 107; Arnold, 125, 125, 101; Denst, 104, 102, 104, 102, 102; Gebhart, 112, 113, 112, 113, 101, 101; Stoehr, 104, 104, 106, 103, 100; Cornthers, 109, 109; Seebt, 102, 108, 102; Powell, 103; Norwick, 102; Denlop, 109, 100; Stewart, 105; Musal, 102.

Standing in the ragtime tournament—Arnold and Stewart, 585; Denst and Sims, 581. Singles—Sims (three games), 297; Stewart (high score), 115.

Mixed tournament held on February 8—Mr. and Mrs. Stoehr, 491; Mr. Hilty and Miss Knutson, 468, high score for lady, Miss Knutson, 79.

The Gorgona Chorus assisted by the Camp Otis orchestra will give a concert on February 20.

A special country school program is being arranged for the latter part of February.

A literary society is being organized and will be in running order by February 25.

GATUN.

Gatun defeated Corozal two out of three games of duckpins on Saturday evening, February 8. The score follows:

Corozal.	Gatun Reds.
Beall..... 90 95 72	Wells..... 96 96 101
Kite..... 77 82	DeMoll..... 89 74 88
Ryan..... 68	Coleman..... 95 70 83
Harper..... 90 70 83	Green..... 86 79 89
Bartlett..... 94 95 94	Claherty.... 83 93 103
Tougher..... 83 87 92	
Totals.... 425 424 423	450 412 463

About 300 people saw the basketball game on Thursday evening, February 5 between teams from the Ohio and the Gatun Y. M. C. A. The score resulted 36 to 6 in favor of Gatun. In the preliminary game between the working boys and the school boys, the working boys won with a score of 7 to 6. Following the basketball games, a wrestling match was held between John Wendell, the champion middleweight wrestler of the United States Navy and Fred Huber of Gatun, the welterweight champion of the Isthmus. A brass band of 16 pieces from the Ohio played several selections.

CRISTOBAL.

There was an attendance of 115 at the moving picture show on Monday night, February 3.

The five men making the highest averages during the month of January are as follows:

Name.	Games	Pin-fall.	Average.	High.	Low.
Barrett.....	49	4,585	93-26	116	75
Hess.....	13	1,119	92-3	112	80
Bullard.....	54	4,944	91-30	111	65
Herrington....	58	5,276	90-56	113	77
Weston.....	51	4,595	90-5	106	75

Stanley Ashton won the prize for high score during the month by a score of 123.

Regular gymnasium classes every Tuesday and Friday night; the track and field men meet on Thursday nights.

OFFICIAL CIRCULARS.

Acting Chief Quartermaster.

CULEBRA, C. Z., February 7, 1913.

CIRCULAR No. 474:

Effective Sunday, February 9, 1913, Captain R. E. Wood will act as Chief Quartermaster during the absence of Colonel C. A. Devol.

GEO. W. GOETHALS, Chairman.

Oil for Lanterns used by Employees in Going to and from Their Work.

CULEBRA, C. Z., February 4, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

It is reported that it is the common practice of employees of the Commission, especially silver employees, in going to and from their work in other than hours of daylight to use lanterns, for which purpose kerosene is ordinarily furnished without charge. The item when taken as a whole is an appreciable one. It is therefore desired that you institute an inquiry, and submit a report whether you consider the furnishing of kerosene for this purpose is an expense which should be born by the Commission.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Return of Metal Drums which have Contained Oil.

CULEBRA, C. Z., February 6, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

The metal drums in which the great part of the lubricating and illuminating oils is furnished have to be returned to the contractor in good condition. It has been reported that a number of these drums are being returned to the Depot Quartermaster in a damaged condition due to careless handling. Please notify all employees concerned that they will be held responsible for the return of these drums in good condition to the Depot Quartermaster, and any negligence or carelessness in the handling of same should be immediately reported to this office for such action as the case may warrant.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Pacific Mail Steamship Company Employees' Rate.

CULEBRA, C. Z., February 8, 1913.

CIRCULAR No. 175-K:

Effective with the steamer scheduled to sail from San Francisco February 13, 1913, and from Balboa February 17, 1913, the Pacific Mail Steamship Company will charge employees of the Isthmian Canal Commission and dependent members of their families a flat rate of \$85.00 between Balboa and San Francisco on both coastwise and direct steamers.

GEO. W. GOETHALS, Chairman.

Acting Surveying Officer.

CULEBRA, C. Z., February 3, 1913.

CIRCULAR No. 476:

Effective February 4th, Mr. Ben Litt will act as Surveying Officer during the absence of Mr. H. S. Farish on leave.

GEO. W. GOETHALS, Chairman.

Contract for Clearing Trails.

Bids will be received by the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, C. Z., until 2.30 p. m. Wednesday, February 19, 1913, at which time they will be opened in the presence of attending bidders, for the clearing of the following trails: Arrajain-Rio Grande, Arrijan-Cochinito, Gamboa-Cruces, Mount Hope-Majagual. Work shall be done in accordance with the specifications to be obtained upon application to the Superintendent of Public Works, Isthmian Canal Commission, Administration Building, Panama. Proposals may be made for any or all trails. The successful bidder will be required to furnish a bond or to make a cash deposit in the sum of 10 per cent of the amount bid as a guarantee that the work will be performed. The Commission reserves the right to reject any or all bids, or accept any bid as may be deemed to its interest, or to waive defects and informalities in proposals. Proposals should be inclosed in sealed envelopes, marked "Proposal for Clearing Canal Zone Trails," and addressed to C. Nixon, Purchasing Agent on the Isthmus, Mount Hope, C. Z.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending February 22, 1913. (75th meridian time.):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
February 16.....	4.48	10.48	5.16	11.20	
February 17.....		6.02	12.03	6.35	
February 18.....	12.40	7.13	1.28	7.43	
February 19.....	1.50	8.13	2.30	8.42	
February 20.....	2.47	9.07	3.20	9.33	
February 21.....	3.38	9.55	4.08	10.20	
February 22.....	4.25	10.42	4.52	11.05	

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning February 11, 1913:

FRESH MEATS.	Price.
Mutton—Stewing, per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire, forequarter (not trimmed, 10 pounds and over), per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Leg (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	16
Chops, per pound.....	24
Loins for roasting, per pound.....	24
Cutlet, per pound.....	28
Pork—Loin chops or roast, per pound.....	16
Suet, per pound.....	2
Soup, per pound.....	5
Stew, per pound.....	9
Plate, per pound.....	9
Corned, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Chuck roast (3 pounds and over), per pound.....	12
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds) per pound.....	18
Sirloin roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, chuck, per pound.....	12½
Round, per pound.....	13
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds), per pound.....	20
Tenderloin (Western), per pound.....	30
Venison (Imported), Stew, per pound.....	6
Forequarter, (not under 6½ pounds), per pound.....	9
Rack (not under 5½ pounds) per pound.....	20
Saddle (not under 7½ lbs.), per pound.....	20
Leg (not under 9 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
MISCELLANEOUS.	
Livers—Beef, per pound.....	11
Calif, each.....	60
Half, each.....	30
Steak, Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	12
Frankfurter, per pound.....	13
Lieberwurst, per pound.....	19
Devonshire Farm, per pound.....	30
Sweetbreads—Beef, per pound.....	32
Eggs, fresh, dozen.....	16
one-half dozen only.....	15
Bluefish, per pound.....	15
Halibut, fresh, per pound.....	15
Salmon, fresh, per pound.....	22
Oysters, quarts, per keg.....	40
Shad, fresh, each.....	50
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds each.....	1.25
Fancy roasting, corn fed, about 4½ pounds each.....	1.00
Fowls, each.....	1.00
Ducks, (Wester, about 4½ pounds), each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	35
Ducks, blackhead, pair.....	60
teal, pair.....	50
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants, per pair.....	1.30
CURED AND PICKLED MEATS.	
Ham—Sugar cured, per pound.....	20
Sliced, per pound.....	22
Half, for boiling, per pound.....	21
Boiled, per pound.....	28
Hocks, per pound.....	18
Beef, salt, family, per pound.....	12
Bacon—Breakfast, whole piece, per pound.....	25
Sliced, per pound.....	26
Ham, Lunch, per pound.....	32
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00

Pigs' feet, per pound.....	9
Tongues, per pound.....	18
DAIRY PRODUCTS.	
Butter—Creamery, special, per pound.....	40
Sheffield Farms, extra fancy, per lb. . .	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Parmesan, per pound.....	35
Edam, tin.....	26
Gouda, per pound.....	34
Snappy, cake.....	10
Milk (Certified), per bottle.....	**20
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	125
½-gallon.....	150
VEGETABLES AND FRUITS.	
Beets, per pound.....	3
Celery, per head.....	11
Cabbage, per pound.....	3
Cucumbers, per pound.....	8
Carrots, per pound.....	3
Lettuce.....	9
Onions, per pound.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	*2
Parsnips, per pound.....	3½
Squash, per pound.....	3
Turnips, per pound.....	3
Yams, per pound.....	3
Apples, per pound.....	5
Grape fruit, each.....	4
Lemons, dozen.....	24
Limes, per 100.....	80
Oranges, Jamaica, per dozen.....	12

*Indicates reductions from last list.
**Indicates 4 cents allowed for return of bottle.
†Indicates advances on last list.
‡Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock supply next lightest weight is supplied and refund note sent for difference.
§Sold only from Commissaries; no orders take for delivery.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon, during the week ending February 8:

Pastores, February 2, from New York, with 131 pieces structural steel, 23 cases structural steel for Mechanical Division; 68 rolls wire cloth, Atlantic Division; 378 bundles steel bars, Panama Railroad Company; 26 reels cable, Superintendent of Erection; 7 cases electrical material, First Division; 200 bundles steel bars, Fortifications; 200 pieces steel bars, 13 cases tape fuse, 20 cases putty, 23 pieces sheet steel, 10 cases hardware, for stock.

Colon, February 3, from New York, with 9 rolls leather, 27 cases envelopes, 10 cases mining machinery, 10 crates mop handles, 11 cases castings, 75 cases lanterns, 16 bales cotton waste, 68 cases caustic soda, 55 drums calcium carbide, 29 cases rubber packing, 34 kegs rivets, 30 cases handles, 34 reels sash cord, 250 kegs track spikes, for stock; 60 pieces structural steel, 150 pieces car couplers, 25 bundles plates, for Mechanical Division; 61 cases electrical material, Superintendent of Erection; 30 cases bridge material, Panama Railroad Company; and a miscellaneous cargo, the whole consisting of 1,200 packages, weighing 300 tons.

Prins August Wilhelm, February 3, from New York, with 200 bundles steel bars for Fortifications; 200 steel bars, for stock; 7 cases electrical material, for First Division.

Nubian, February 5, from Liverpool, with 210 barrels carbolic acid, for stock.

Metapan, February 5, from New York, with 12 cases electrical material, for Mechanical Division; 23 crates pump machinery, 126 cases gate machinery, 18 cases valve machinery, for Superintendent of Erection; 45 coils Manila rope, 400 cases linseed oil, for stock; 120 bundles steel bars, for Panama Railroad Company.

Cartago, February 6, from New Orleans, with 345 pieces White Oak, 1 reel steel cable, for Mechanical Division; 107 pieces piling, 4,654 pieces cross ties, 3,931 pieces Yellow Pine lumber, 10 bundles oars, 1,055 cases oils and greases, 28 rolls cotton duck, 10 cases paint, for stock.

Belle Vernon, February 7, from Galveston with 24,387 pieces Yellow Pine lumber, for stock.

The following ships arrived at, or departed from, the port of Balboa during the week ending February 8:

Arrivals—February 3, *Pachitea*, from Mollendo; February 3, *Guatemala*, from Callao; February 4, *Quito*, from Guayaquil; February 5, *Arica*, from Buenaventura; February 6, *Peru*, from Guayaquil.
Departures—February 3, *Limari*, to Valparaiso; February 7, *Kansas City*, to San Francisco.

FOUND—In Culebra, a watch. Owner may secure the same from E. C. Smith Jr., Assistant Chief Engineer's office, Culebra, C. Z.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.		
Panama.....	P. R. R. Monday.....	Feb. 10
Allianca.....	P. R. R. Saturday.....	Feb. 15
Colon.....	P. R. R. Friday.....	Feb. 21
Advance.....	P. R. R. Friday.....	Feb. 28
Advance.....	P. R. R. Friday.....	Feb. 28
Panama.....	P. R. R. Friday.....	Mar. 6
Allianca.....	P. R. R. Wednesday.....	Mar. 12
Colon.....	P. R. R. Tuesday.....	Mar. 18
Advance.....	P. R. R. Tuesday.....	Mar. 25
Panama.....	P. R. R. Monday.....	Mar. 31
Allianca.....	P. R. R. Saturday.....	Apr. 5
Colon.....	P. R. R. Saturday.....	Apr. 12
Advance.....	P. R. R. Saturday.....	Apr. 19
Panama.....	P. R. R. Friday.....	Apr. 25
Allianca.....	P. R. R. Thursday.....	May 1
Colon.....	P. R. R. Wednesday.....	May 7
Advance.....	P. R. R. Tuesday.....	May 13
CRISTOBAL TO NEW YORK.		
Advance.....	P. R. R. Saturday.....	Feb. 15
Panama.....	P. R. R. Saturday.....	Feb. 22
Allianca.....	P. R. R. Friday.....	Feb. 28
Colon.....	P. R. R. Thursday.....	Mar. 6
Advance.....	P. R. R. Wednesday.....	Mar. 12
Panama.....	P. R. R. Tuesday.....	Mar. 18
Allianca.....	P. R. R. Monday.....	Mar. 24
Colon.....	P. R. R. Sunday.....	Mar. 30
Advance.....	P. R. R. Monday.....	Apr. 7
Panama.....	P. R. R. Saturday.....	Apr. 12
Allianca.....	P. R. R. Friday.....	Apr. 18
Colon.....	P. R. R. Thursday.....	Apr. 24
Advance.....	P. R. R. Thursday.....	May 1
Panama.....	P. R. R. Wednesday.....	May 7
Allianca.....	P. R. R. Tuesday.....	May 13

NEW YORK TO COLON.		
Prinz Joachim.....	H. A. Saturday.....	Feb. 8
Sixaola.....	U. F. C. Saturday.....	Feb. 8
Almirante.....	U. F. C. Wednesday.....	Feb. 12
Prinz Eitel Friedrich.....	H. A. Saturday.....	Feb. 15
Carrillo.....	U. F. C. Saturday.....	Feb. 15
Magdalena.....	R. M. Saturday.....	Feb. 15
Santa Marta.....	U. F. C. Wednesday.....	Feb. 19
Prinz August Wilhelm.....	H. A. Saturday.....	Feb. 22
Pastores.....	U. F. C. Saturday.....	Feb. 22
Metapan.....	U. F. C. Wednesday.....	Feb. 26
Prinz Sigismund.....	H. A. Saturday.....	Mar. 1
Tivivies.....	U. F. C. Saturday.....	Mar. 1
Tagus.....	R. M. Saturday.....	Mar. 1
Zacapa.....	U. F. C. Wednesday.....	Mar. 5

COLON TO NEW YORK.		
Metapan.....	U. F. C. Thursday.....	Feb. 13
Prinz Sigismund.....	H. A. Monday.....	Feb. 17
Tivivies.....	U. F. C. Tuesday.....	Feb. 18
Tagus.....	R. M. Tuesday.....	Feb. 18
Zacapa.....	U. F. C. Thursday.....	Feb. 20
Prinz Joachim.....	H. A. Tuesday.....	Feb. 25
Sixaola.....	U. F. C. Tuesday.....	Feb. 25
Almirante.....	U. F. C. Thursday.....	Feb. 27
Prinz Eitel Friedrich.....	H. A. Monday.....	Mar. 3
Carrillo.....	U. F. C. Tuesday.....	Mar. 4
Oruba.....	R. M. Tuesday.....	Mar. 4
Santa Marta.....	U. F. C. Thursday.....	Mar. 6
Prinz August Wilhelm.....	H. A. Tuesday.....	Mar. 11

NEW ORLEANS TO COLON.		
Heredia.....	U. F. C. Saturday.....	Feb. 8
Parlmina.....	U. F. C. Wednesday.....	Feb. 12
Turrialba.....	U. F. C. Saturday.....	Feb. 15
Cartago.....	U. F. C. Wednesday.....	Feb. 19
Abangarez.....	U. F. C. Saturday.....	Feb. 22
Heredia.....	U. F. C. Wednesday.....	Feb. 26
Atenas.....	U. F. C. Saturday.....	Mar. 1

COLON TO NEW ORLEANS.		
Cartago.....	U. F. C. Thursday.....	Feb. 13
Atenas.....	U. F. C. Saturday.....	Feb. 15
Heredia.....	U. F. C. Thursday.....	Feb. 20
Parlmina.....	U. F. C. Saturday.....	Feb. 22
Turrialba.....	U. F. C. Thursday.....	Feb. 27
Cartago.....	U. F. C. Saturday.....	Mar. 1

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers for New York, via Kingston and Santiago de Cuba, sail thus: the *Prins Joachim* and the *Prins August Wilhelm* on alternate Tuesdays at 10 a. m., and the *Prins Sigismund* and the *Prinz Eitel Friedrich* on alternate Mondays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays, at 3 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Boca de Toro, on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, FEBRUARY 19, 1913.

No. 26.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications,
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication, or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Increased Excavation on Account of Slides.

The development of slides in Culebra Cut has resulted in an addition of 5,634,161 cubic yards to the total estimated excavation on that part of the work, so that the estimate now stands at 99,516,817 cubic yards. In the estimates of December, 1908, the excavation in Culebra Cut was placed at 78,042,295 cubic yards, in 1910 this was changed to 84,186,724 cubic yards, 1911 to 89,444,005 cubic yards, 1912 to 93,882,000. The total canal excavation now is estimated at 218,138,299 cubic yards, of which 190,892,279 cubic yards have been accomplished. The condition of the work in the Cut was discussed in detail in last week's issue of THE CANAL RECORD.

Canal Work in January.

The grand total of Canal excavation to February 1 was 190,892,279 cubic yards leaving to be excavated 27,246,020 cubic yards. Since the last monthly report of excavation was published there have been added to the excavation yet to be accomplished in Culebra Cut 5,634,161 cubic yards on account of the slides that have been developing there.

The total excavation for the month of January was 2,612,020 cubic yards. The dry excavation amounted to 1,672,117 cubic yards and was entirely by steamshovels. The dredges and monitors removed 939,903 cubic yards. The progress in the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 555,111 cubic yards. Of this total 46,773 cubic yards consisted of dry excavation at Gatun Locks, and the remainder was wet excavation—508,338 cubic yards from the Atlantic entrance.

The total excavation in the Central Division was 1,135,580 cubic yards, which includes 18,360 cubic yards in the Culebra Cut section charged to Obispo Diversion.

In the Pacific Division, the total excavation was 912,329 cubic yards, 489,764 cubic yards

of which consisted of dry excavation. Of the 431,565 cubic yards of wet excavation 215,025 cubic yards were from the channel, and 216,540 cubic yards were taken out at the Balboa terminals.

A detailed statement of the excavation, and a summary of the work on the locks and dams follows:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—			
Locks, dam and spillway	46,773		46,773
Mindi Terminal			
Total	46,773		46,773
Wet excavation—			
Atlantic entrance	583,338		508,338
Locks, dam and spillway			
Terminal			
Total	508,338		508,338
Total wet and dry excavation	555,111		555,111

CENTRAL DIVISION.

Dry excavation—		
Culebra Cut	1,117,220	1,172,200
Chagres section		
Obispo Diversion	18,360	18,360
Total	1,135,580	1,135,580

PACIFIC DIVISION.

Dry excavation—		
Locks, dams and spillways	27,600	27,630
Terminal	54,114	54,670
Prism	407,957	407,967
Total	489,711	489,764
Wet excavation—		
Pacific entrance	215,125	215,125
Miraflores Locks		
Diversions		
Terminal	216,540	216,540
Total	431,565	431,565
Total wet and dry excavation	921,276	921,329

TOTAL CANAL EXCAVATION.

Dry excavation	1,672,117	1,672,117
Wet excavation	939,903	939,903
Total	2,612,020	2,612,020

LOCKS AND DAMS.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	Cu. Yds.	Cu. Yds.
Concrete placed in locks	28,085	55,108	83,193
Concrete placed in dams and spillways	4,186	3,983	8,169
Fill placed in dams	149,602	72,343	221,945

Mean rainfall along Canal (ten stations) 2.82 inches. By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as a prism, diversions, or locks, etc.; that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

Erecting Lock Gates.

All the material for the lock gates has been shipped from the shops of the contractor in the United States, and the last delivery should be made on the Isthmus this week. Spare parts are being furnished, also, and some of the material for these is still being manufactured. These consist of all the parts necessary for the erection of any two gate leaves for use in case of injury to a gate. They will be stored temporarily at Paraiso, and later they will be taken to the permanent shops at Balboa for storage.

At the end of January the gates were 68 per cent erected, 51 per cent riveted, and 5 per cent finished, the state of completion at each lock being:

	Gatun	Pedro Miguel	Miraflores
Erecting	78	82	43
Riveting	66	70	15
Finishing	10		
Number of leaves	40	24	28

Work is in progress at Gatun on all of the 40 gate leaves, at Pedro Miguel on all of the 24 leaves, at Miraflores on 20 of the 28 leaves. During January the progress was better than during any previous month. The number of rivets driven in January, the total driven to February 1, and the number yet to be driven are shown in the following statement:

Locks.	Driven in January.	Driven to Feb. 1.	Remaining to be driven approximately.
Gatun	269,372	1,590,600	819,400
Pedro Miguel	152,279	980,000	420,000
Miraflores	119,568	261,000	1,479,000

There are 76 gangs at work riveting at Gatun, 40 at Pedro Miguel, and 27 at Miraflores. Practically all the men operating riveting machines are negroes. The hand riveting is done by white Americans. The total force at work on the gates in January was 514 Americans, and 3,371 negro laborers, a total of 3,885, or 445 more than in December.

High Record for Berm Cranes.

Berm crane "H", working at the south end of the west wall of the lower chamber of Miraflores Locks on January 31, mixed and placed 954 cubic yards of concrete in 8 hours and 20 minutes, actual working time. This was an average of one cubic yard for every 31½ seconds; during one hour, 160 cubic yards were placed. This establishes a new record for cranes in this class, the best previous record being 952 cubic yards on a day of 12 hours. The operators on January 31 were James G. Emerson and William O'Mara, on boom and cantilever, respectively, and O. D. Carlton, foreman of the crane, in charge of mixing. The crane is equipped with two 2-cubic yard concrete mixers.

CONCRETE WORK IN THE LOCKS AND SPILLWAYS.

Over 97 per cent of the total of 4,446,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on February 15, the amount in place being 4,306,209 cubic yards.

GATUN LOCKS AND SPILLWAY.

Over 95 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on February 15, being 1,953,457 cubic yards, out of a total of 2,043,730. In the spillway of Gatun Dam there had been placed 218,203 cubic yards out of the total of 225,000 cubic yards. A statement of the amount placed each working day of the week ending February 15, and of the total, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers			Large stone.	Total.	SPILLWAY		
	Concrete placed.	Hour worked.	No. of mixer.	Concrete placed.	Hours worked.	No. of mixers			Concrete laid.	Hours worked.	No. mixers used.
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.		
February 10.....	13.40	22.32	4	.....	.....	.....	.....	1,340	159	6.50	2
February 11.....	938	15.64	4	.....	.....	.....	.....	938	124	6.00	2
February 12.....	1,214	20.24	4	.....	.....	.....	.....	1,214	128	6.75	2
February 13.....	1,128	18.64	4	.....	.....	.....	.....	1,118	204	7.00	1
February 14.....	1,148	19.80	4	.....	.....	.....	.....	1,148	140	5.25	2
February 15.....	1,530	25.50	4	.....	.....	.....	.....	1,530	96	5.50	1
Total.....	7,288	122.14	4	.....	.....	.....	.....	7,288	851	37.00	•
Previously reported .....	.....	.....	.....	.....	.....	.....	.....	1,946,169	217,352	.....	.....
Grand total .....	.....	.....	.....	.....	.....	.....	.....	1,953,457	218,203	.....	.....

MIRAFLORES LOCKS AND SPILLWAY.

Over 96 per cent of the concrete for the system of two twin locks at Miraflores was in place on February 15, the total amount on that date being 1,451,116 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.						Mixed by hand.	Large stone.	Total.	SPILLWAY. AUXILIARY PLANT. 1-cubic yard mixers.			Total.	
				1-cubic yard mixers.			½-cubic yard mixers.										
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers				Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.				Cu. Yds.
February 10.....	1,590	37.33	8				64	6.00	1				1,654	87	4.50	2	87
February 11.....	1,390	36.50	8				84	13.00	3				1,474	86	4.00	1	86
February 12.....	952	29.67	8				105	15.00	2				1,057	81	3.50	1	81
February 13.....	1,240	34.17	8				125	16.50	2				1,365	153	7.50	1	153
February 14.....	1,226	33.83	8				79	17.00	2				1,305	179	6.50	1	179
February 15.....	1,544	38.00	8				99	17.00	2				1,643	189	7.50	1	189
Total.....	7,942	209.50	8				556	84.50	2				8,498	775	33.50	1.17	775
Previ'y reported												3,693	1,442,618				4,825
Grand total....												3,693	1,451,116				5,600

Ancon Crusher.

The following is a statement of rock crushed at Ancon Quarry during the weeks ending February 1, 8 and 15:

DATE.	Hours worked.	Cubic yards.
January 27.....	10.55	2,516
January 28.....	9.00	3,051
January 29.....	8.10	3,310
January 30.....	9.30	3,473
January 31.....	9.15	2,851
February 1.....	10.10	3,235
Total.....	57.50	18,441
February 3.....	9.40	2,034
February 4.....	7.25	2,458
February 5.....	9.15	2,431
February 6.....	8.25	1,828
February 7.....	9.45	3,143
February 8.....	8.40	2,364
Total.....	53.10	15,208
February 10.....	9.00	2,842
February 11.....	10.05	3,036
February 12.....	8.35	2,494
February 13.....	9.05	2,306
February 14.....	9.40	3,399
February 15.....	10.05	2,915
Total.....	56.30	16,992

Work on New Pier at Balboa.

Sinking caissons for supporting the new Pier No. 1 of the Balboa terminals began on February 4, at the outer end, which is about 2,650 feet east of the Canal axis and approximately opposite the west end of Sosa Hill. The pier will be 1,000 feet long by 201.33 feet wide and in its construction will cut through the west toe of the old Sosa Dam; the inner end will connect at right angles with the quay wall which forms the head of the slips and which will be itself parallel

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 910,870 cubic yards, having been placed at the close of work on February 15. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.
February 10.....				127	12.00	3			127
February 11.....									
February 12.....				44	4.00	1			44
February 13.....									
February 14.....				126	13.50	3			126
February 15.....				244	24.00	3			244
Total				537	53.50	1 67			541
Previously reported,								4,493	910,329
Grand total.....								4,493	910,870

with the Canal. The caissons will be sunk throughout the length of the proposed pier in six rows; the distance between the center rows being 58 feet from center to center, the floor and depressed tracks will in this space rest directly on the ground if the material proves sufficiently stable after the slips are dredged. The site crosses the old channel of the Rio Hondo and spoil from the first caissons is being dumped across it from a trestle to dike it off so the water will not interfere with sinking the caissons when the work reaches this channel.

Examinations by Board of Local Inspectors.

Examinations for pilots, masters, mates, engineers, chauffeurs, and navigators of motor boats, will be held by the Board of

Local Inspectors at the Administration Building, Ancon, on Wednesday, February 26, 1913, beginning promptly at 8 a. m. All applicants for licenses must secure from the Executive Office, Ancon, forms of application and information respecting the filling out of same, not later than the day previous to the examination. In addition, all persons desiring chauffeurs' licenses must provide themselves with automobiles with which to demonstrate their ability properly to operate same.

Six automatic gas buoys for use in the Canal have arrived and are being assembled at Balboa. They will be placed in the Pacific entrance about March 1.

FOUND.—At Ancon Hospital, a draft on London, drawn by Panama Banking Company. Apply to Chief Clerk, Ancon Hospital.

PORTABLE MIXING PLANT.

Concrete Mixer and Supplies Move in Train to Collapsible Forms.

The new piers and wharves of the Balboa terminals will be supported on concrete caissons, sunk to rock. The large quantity of caisson shell required for this work has caused the construction of a special plant for its manufacture. Its essential feature is a movable mixing plant which can be shunted along a railroad track beside the platform on which the collapsible forms and reinforcement for the sections are set up. The plant has a portable concrete mixer mounted on cribbing on a flat car so that the spout is 14 feet above the platform. Coupled to the flat car is a box car containing cement, and at the "flat's" other end are alternate cars of sand and crushed rock. Portable runways for wheel barrows are laid along the tops of the cars, which are connected in train and moved as a unit. Thus all the materials for the concrete are kept constantly near the mixer, even when the train is in motion from one form to another. It is moved ordinarily by an air winch which draws through stationary sheaves at the ends of the track a $\frac{3}{8}$ -inch hauling cable with connections to the ends of the train.

When the train has been "spotted" opposite a form which is ready the concrete is poured into it through a chute. As it falls from the chute it is caught on a circular wooden platform set over the inner shell, and distributed to the annular space by men with hoes. The placement is quite simple and proceeds at the rate of mixer output. As soon as the shell has been cast the train is moved to another form. The concrete is allowed to set for 24 hours and then the forms are removed and cleaned at a special platform for their storage, after which they are set up again on the operating platform. The caisson shell is allowed to harden for three days before removal to a storage yard.

The platform on which the forms are set up and filled is 15 feet wide by 350 feet long, with an extension 50 feet in length at the south end on which the reinforcing steel is assembled. As the reinforcing bars are unloaded from the cars they are laid in a stock pile at the end of the platform, next which a set of steel rolls has been placed. The rods are fed from the pile directly into the rolls, which are set to bend them into hoops of a diameter four inches less than the outside diameter of the finished shell. The bars are set up around a wooden cage and tied together, after which the reinforcement is handled as one piece. A light derrick mounted on a truck and hand-operated picks up a set of reinforcement and carries it to one of the erected inner forms for the shells, dropping the reinforcement around it like a cage. Six pipes are then placed vertically around the reinforcement at equal distances to make cores for connecting rods, the outer form is erected and the space between forms adjusted with wooden blocks. The completed form is then ready for the concrete.

Each section of shell is six feet high, with an inside diameter of 5 feet 6 inches and a thickness of shell of one foot, and contains 4 $\frac{3}{4}$ cubic yards of concrete. In a normal day's work about 16 such sections will be poured from the $\frac{1}{2}$ -cubic yard mixer. During the month of January 1,724 linear feet were made with a $\frac{1}{2}$ -yard mixer and it is expected that the run during February, with the larger

mixer, will approximate 2,200 feet. In all, about 28,000 linear feet of concrete caisson will be used in the one pier and the quay wall, the construction of which has been authorized to date. Steel shells will be used in deep water, on account of their greater length, which facilitates driving. Both concrete and steel shells will be filled with concrete containing a well protected reinforcement of steel rails.

The cost of production at the Balboa plant is considerably less than the cost of making shell at other points in the Canal construction. No comparison with such work off the Isthmus is available because so great a quantity of shell has not been made elsewhere.

New Steamship Service from San Francisco to Panama.

The through billing concession for United States coastwise trade, formerly made to the California and Atlantic Steamship Company, and held also by the Pacific Mail Steamship Company, has been extended by the Panama Railroad Co., to the Edgar F. Luckenbach Company of New York, which proposes to operate ships between the Isthmus and San Francisco. The first ship of the service will arrive at Balboa on February 19, the *Lewis Luckenbach*. The company owns 27 vessels of American register, but at present only three of these will be devoted to the San Francisco trade—*Lewis Luckenbach*, 6,000 cargo tons; *Pleiades*, 5,500 cargo tons; and *Lyra*, 6,000 cargo tons. This fleet will be added to as rapidly as the Panama railroad is able to increase the amount of cargo it can handle, because there is an abundance of freight offering both ways. Cargo on the Atlantic side will be handled by the Panama railroad ships. The home office of the company will be in San Francisco, and the Panama office at Balboa with Mr. R. E. Wheelan in charge.

Spiders on the Canal Work.

A number of spiders down at Gorgona Shops are contributing their little share to the construction of the Canal. They are in the instrument room, and are carefully protected, because from their cocoons the instrument makers procure filament for use in the transits of the surveyors. In the microscopes of the transits are very fine threads by means of which the surveyor determines when his instrument is centered upon an object. This thread is of platinum when the instruments are new, but when it wears out and must be replaced the instrument repair men at Gorgona have been using the thread taken from the cocoon of a certain variety of spider that has been encouraged to multiply in the instrument shop for the past seven years. This use of the filament from the cocoon is not original on the Isthmus, indeed it has been a common practice for many years.

It has been found that when the instruments so repaired are used early in the morning or during a rain the thread does not remain taut, because the instrument itself contracts. As soon as the instrument warms up, however, the spider web answers its purpose very well. In order that there may be no time of the day in which the transits may not be used, an order has been placed for platinum thread. As soon as it arrives on the Isthmus the use of the spider web will be discontinued, and the Canal force will be reduced by at least half a dozen more workers, for there are at least that many spiders spinning fiber at Gorgona Shops.

STEAMSHOVEL RECORDS.

Work of Central Division Steamshovels During the Month of January.

During the month of January the total amount of material excavated in the Central Division was 1,135,580 cubic yards, of which 186,131 cubic yards were classified as earth, and 949,449 cubic yards as rock. Of the total 1,117,220 cubic yards were primary excavation in the Canal Prism, and 18,360 cubic yards were from the Obispo Diversion. The total of 1,135,580 cubic yards was removed by steamshovels.

The high record for the month was made by shovel 227 working 26 days in the Empire District, which excavated 45,541 cubic yards of rock. The second best record for the month was made by shovel 208 working 26 days in the Culebra District, which excavated 44,481 cubic yards of rock.

The best record for a shovel of the 70-ton class was made by shovel 109 working 25 $\frac{1}{2}$ days in the Culebra District, which excavated 28,056 cubic yards of earth.

Shovel 256 working in the Culebra District made a high record for one day by excavating 3,230 cubic yards of earth on January 9.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best records for the month and for one day are shown in the following table:

BEST RECORDS FOR THE MONTH.

SHOVEL No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
227.....		45,541	45,541	26
201.....		43,486	43,486	26
232.....		42,759	42,759	26
EMPIRE DISTRICT.				
208.....		44,481	44,481	26
203.....	41,659		41,659	25
256.....	41,500		41,500	25 $\frac{1}{2}$

BEST RECORD FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
227 Empire.....		Jan. 20	Rock.....	2,964
201 Empire.....		Jan. 7	Rock.....	2,661
227 Empire.....		Jan. 24	Rock.....	2,584
256 Culebra.....		Jan. 9	Rock.....	3,230
208 Culebra.....		Jan. 25	Rock.....	2,850
204 Culebra.....		Jan. 9	Rock.....	2,715
204 Culebra.....		Jan. 3	Rock.....	2,706

Extension at Pier 11, Cristobal.

It has been decided to extend Wharf 11, newly erected along the south side of the extreme end of Cristobal Point, to connect with the present Pier 11. This will be an additional construction 175 feet long which will make a continuous wharf along the south side. The supports will be steel-shelled concrete caissons like those used on the new Wharf 16.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending March 1, 1913 (75th meridian time):

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
February 23		5.11	11.25	5.33	11.50
February 24		5.55	12.10	6.17	
February 25	12.34	6.40	12.54	7.00	
February 26	1.20	7.25	1.40	7.45	
February 27	2.10	8.13	2.30	8.33	
February 28	3.03	9.10	3.26	9.30	
March 1	4.05	10.20	4.36	10.43	

TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND
 | All figures are of work useful for the completed Canal. |

DRY EXCAVATION.
CENTRAL DIVISION.

DRY EXCAVATION.
CENTRAL DIVISION.

Concrete in dams to February 1, 1913. Gatun spillway, 216,405 cu. yds.
 Flores dam and spillway, 4,676 cu. yds. Pedro Miguel dam, 1,269 cu. yds.
 1,402,533 cu. yds. in 1909 and 1910. 114,836 cu. yds. in 1909 and 1910. 197,603
 cu. yds. in 1909 and 1910.

WILL PLACED IN DAMS 1906-1913.

YEAR	GATUN			PILONO MOUNTAIN			MIRAFLORES		
	Wtd	Day	Cu. Yds.	Wtd	Day	Cu. Yds.	Wtd	Day	Cu. Yds.
To January 1, 1911	5,833,076	6,128,105	460,882	2,472	2	69,563	2,472	2	69,563
1911	3,493,388	2,611,076	377,660	366,346		418,042			
1912	2,469,169	1,492,151	249,401			52,195			
1913									
Total	10,728,644	10,898,872	6,00,874	661,048		1,510,654			

CANAL EXCAVATION TO DATE.

By French Companies.....	78,146,960
French excavation useful to present Canal.....	29,908,000
By Americans— New excavation.....	118,100,749

By Airfreight	118,100.749
Dredges	7,27.91 530
Total	170,892,27.9
May 4 to December 31, 1904	243,472
January 1 to December 31, 1905	1,799,227
January 1 to December 31, 1906	4,918,407
January 1 to December 31, 1907	15,765,290
January 1 to December 31, 1908	35,116,735
January 1 to December 31, 1909	35,096,166
January 1 to December 31, 1910	41,437,777
January 1 to December 31, 1911	31,603,899
January 1 to December 31, 1912	30,269,469
January 1 to February 1, 1913	2,611,967

TOTALS BY DIVISIONS AND AMOUNT TO BE EXCAVATED.

DIVISIONS.	Amount excavated	Remaining to be excavated.
<i>Alluvium—</i>		
Dredging.....	8,719,770 }	164,347 }
Dredges.....	34,559,618 }	4,642,389 }
<i>Canal—</i>		
Culchra Cul.....	89,666,847 }	4,478,062 }
All other points.....	12,58,165 }	
<i>Parth—</i>		
Dredging.....	7,487,746 }	9,850,000 }
Dredges.....	36,073,673 }	150,000 }
Grand total	190,842,279	10,090,000
		12,603,631
		9,780,638
		27,246,929

WET EXCAVATION.

Mos.	ATLANTIC DIVISION.†					PACIFIC DIVISION.‡					BALBOA TERMINALS*	
	ATLANTIC ENTRANCE.‡					PACIFIC ENTRANCE.‡‡						
	1908.	1909.	1910.	1911.	1912.	1913.	1908.	1909.	1910.	1911.		1912.	1913.
Jan.	490,701	521,050	510,055	520,181	520,298	508,438	460,250	469,529	518,936	379,810	334,735	215,025
Feb.	477,882	444,910	492,435	455,318	551,369		763,519	671,477	285,701	336,866	434,796	77,383
Mar.	546,986	641,208	412,348	403,374	103,374		793,281	865,056	462,588	630,794	401,930	
Apr.	496,366	470,635	190,574	491,579	134,261		570,533	731,737	534,322	439,622	381,995	
May.	564,368	315,470	447,578	414,798	229,466		530,466	720,753	481,809	548,097	388,410	
June	577,769	182,575	458,021	455,198	343,398		656,221	843,685	475,366	576,100	438,006	
July	625,407	628,451	421,091	425,108	409,398		690,170	713,181	515,782	520,499	392,511	
Aug.	638,217	422,476	508,493	429,456	479,115		737,774	625,263	630,281	441,646		
Sept.	634,276	470,574	451,873	420,443	372,912		759,980	662,76	473,585	531,667	455,089	
Oct.	598,269	314,278	594,788	470,440	572,788		762,278	720,120	329,224	481,878		
Nov.	570,352	457,889	602,708	742,442	670,977		729,960	627,791	425,570	346,089	534,773	
Dec.	679,664	489,121	485,730	535,449	814,373		729,960	627,460	357,034	141,189	594,747	
Total	6,742,936	4,839,407	5,528,661	5,785,226	5,467,709	5,084,334	4,056,078	3,309,498	5,538,745	5,472,308	4,891,741	215 0 5

†Breding, Gatun Dam, 1907, 38,425 cu. yds.; Gatun Locks, 1908-12, 1,769,977 cubic yards.
‡Min-flares Locks and Dam, 1909-12, 652,246 cu. yds.; total to February 1, 1913, 652,246 cu. yds.
‡‡Total to February, 1913, 32,712,216 cu. yds., including 4,049,379 cu. yds. in 1908-07.
*Total to February 1, 1913, 63,393,517 cu. yds., including 3,820,475 cu. yds. in 1908-07.
††Total to February 1, 1913, 1,027,910 cu. yds.

216,540	77,383	216,540										
								</				

*Total to February 1, 1913, 1,027,910 cu. yds.

COST KEEPING.

Method and Effect of Keeping Costs of Construction and Engineering.

Cost keeping in connection with the construction and engineering work on the Canal has the threefold object of informing the Chief Engineer each month regarding (1) the cost of work compared with the estimates made in December 1908; (2) the cost of work of a similar nature on two or more parts of the Canal; (3) the costs of similar pieces of work from month to month on the same part of the Canal. No attempt is made to keep so minute a record as would be kept on similar work in the United States, because this would involve an elaborate and costly system, and when the data were compiled they would not be comparable with data for similar work in any other part of the world.

The results of the cost keeping have been to keep alive the spirit of emulation that exists among the various divisions, encourage close supervision by indicating to men in responsible positions where and how economies may be effected, and generally to promote the spirit of economy by emphasizing the question of costs.

Returns from the cost keeping are placed before the Chief Engineer each month, and careful comparisons are made. If it is found that the costs of excavation, masonry, dams, machinery erection or other classes of work are excessive in one part of the Canal relative to similar work on another part, or in one month relative to the cost of work in previous months, the responsible official is so informed in order that he may make due explanation or take steps to remedy the situation.

The present cost system dates from January 1, 1910, and was evolved from a system begun on July 1, 1907. For administrative purposes, the costs are compiled by an accountant in the office of each division engineer, and sent thence to the Cost Keeping Accountant in the office of the Chief Engineer at Culebra, where they are checked and compiled for publication.

There are three main sources of expense—labor, materials, and administration. The foremen on the work keep track of the distribution of labor in two sets of books, one for odd days and one for even days. Each night the books used that day are sent to the Division offices, and are looked over carefully by the supervisors of the work and by the cost accountant before they are again sent into the field. In this way they are kept in perfect order. At the end of each month the amount of labor that went into each job and class of work is determined. This method is applied only where the variety of work requires it. In the Central Division where all the work is dry excavation the labor charges are taken from the time rolls and from the daily reports of the men in charge of equipment.

Material costs are located by a system of foreman's orders kept in triplicate, by which materials drawn from stores are reported by the storekeepers of the Quartermaster's Department, and by them to the Division offices. The costs are charged each day by the division cost accountant to the various classes of work and at the end of each month these must agree with reports sent to the Cost Keeping Accountant in the Chief Engineers' office by the storekeepers of the Quartermaster's Department. A similar system is used in

accounting for materials drawn for the shops. The methods employed in the shops will be referred to in a future article.

The arbitrary charge for plant and equipment on each part of the work is based upon the cost of the plant and the amount of work it must accomplish, as determined by the estimates of 1908. It was estimated at that time, for instance, that the plant for handling concrete at Miraflores Locks would cost \$674,651.13 and that the concrete to be placed would amount to 1,503,570 cubic yards. The plant arbitrary added to every cubic yard of concrete produced by this plant is enough to represent the proportion of the plant cost that each yard should bear. Every six months this arbitrary is adjusted on the basis of work performed and to be done. In this way the cost of the plant will be absorbed by the time the work is accomplished. This method of determining arbitraries is employed throughout the Department of Construction and Engineering.

Overhead charges are located in each division by the cost accountants. The general administrative expenses are prorated to the construction divisions on the basis of total expenditures, except where they can be definitely located to the work. Other miscellaneous general expenses are prorated as nearly as possible on the basis of the benefits received by each division.

Excavation is one class of work carried on in all divisions and is one of the simplest from the cost keeping standpoint. The work is divided into its various parts and careful track is kept in the field of the work and materials devoted to each part. This classification is shown in the following statement of costs of dry excavation in the Central Division for the quarter ending December 31, 1912:

Classification.	MONTH.	
	October	November
Quantities—Cubic Yards.	1,113,420	973,071
Clearing.....		
Drilling.....	\$0.0657	\$0.0691
Blasting.....	.0514	.0532
Loading.....	.0550	.0566
Tracks.....	.0912	.1005
Transportation.....	.1015	.0879
Dumps.....	.0507	.0697
Pumps.....	.0085	.0126
Maintenance of Equipment..	.1075	.1277
Plant arbitrary.....		
Division expense.....	.0140	.0142
Total Division cost.....	.5455	.5915
Administration and General expenses.....	.0186	.0400
Total cost.....	\$0.5641	\$0.6315

Classification.	MONTH.	
	December	Total
Quantities—Cubic Yards—	1,074,510	3,161,001
Clearing.....		
Drilling.....	\$0.0601	\$0.0648
Blasting.....	.0534	.0536
Loading.....	.0529	.0548
Tracks.....	.0950	.0957
Transportation.....	.0806	.0902
Dumps.....	.0632	.0608
Pumps.....	.0057	.0088
Maintenance of Equipment..	.1118	.1152
Plant arbitrary.....		
Division expense.....	.0114	.0132
Total Division cost.....	.5350	.5561
Administration and General expenses.....	.0372	.0315
Total cost.....	\$0.5722	\$0.5876

Each of these groups or classes is subdivided into "operation" and "repairs," and each of these according to the elements that enter into the cost. In December the subdivision was as follows:

Drilling—Labor, shop expenses, material and supplies, power, repairs. Repairs are again subdivided into labor, shop expense, and material and supplies.

Blasting—Labor, shop expense, material

and supplies, explosives including freight and handling.

Transportation—Labor, coal including freight and handling, material and supplies, hostling, repairs to locomotives, cars and cranes

Dumps—Labor, shop expense, material and supplies, repairs.

Tracks—Labor, shop expense, material and supplies, repairs and equipment.

Drainage and Sumps—Labor, shop expense, material and supplies.

Loading and maintenance of equipment costs are compiled from the items reported above, and do not form a separate class in the reports of the division engineers.

No clearing and no plant arbitrary are charged. The clearing for excavation in Culebra Cut is finished; and the plant arbitrary assigned to this work has been absorbed, because it was based on an estimate in 1908 of 87,644,493 cubic yards, which amount, due to the slides in Culebra Cut, has already been exceeded.

Elements entering into the varying costs of classes from month to month do not appear in the printed cost statement, but form part of the reports of the division engineers. One of the largest and most variable items is transportation, which was \$.01015 per cubic yard in October, \$.00879 in November, and \$.00806 in December. The amount of material handled and the rainfall, which was greater in October than in the other months, are unclassified elements in the greater cost; the more tangible elements are the following:

GROSS COST OF OPERATING TRAINS.

	December	November	October
Labor.....	\$97,910.76	\$99,065.55	\$101,219.15
Coal.....	43,863.93	40,711.60	44,582.84
Material and supplies.....	2,622.82	2,428.43	14,062.09
Hoisting.....	4,924.40	5,409.26	5,364.20
Repairs to locomotives.....	36,503.97	32,170.91	34,224.96
Repairs to cars, wood.....	36,583.42	37,429.02	38,976.14
Repairs to cars, steel.....	10,684.67	11,427.43	12,148.71
Repairs cranes, wrecking.....	251.88	2.38	17.79
Miscellaneous.....			122.02
Total.....	\$233,345.85	\$228,644.58	\$250,717.90

All the classes are susceptible of analysis in the above manner, and it is this dividing of each part of work into its components that makes the cost keeping system of value in supervision.

A comparison of similar classes of work in different divisions, as affected by local conditions, is afforded by the cost of dry excavation in the Central and Pacific Divisions for the last quarter of 1912:

COST PER CUBIC YARD OF DRY EXCAVATION.

Cubic yds.—Excavation.	Central Division 3,161,001	Pacific Division 759,985
Drilling.....	.0648	.0862
Blasting.....	.0526	.0159
Loading.....	.0548	.0941
Tracks.....	.0957	.2008
Transportation.....	.0902	.0969
Dumps.....	.0608	.0173
Pumps.....	.0088	.0309
Maintenance of Equipment	.1152	.0873
Plant arbitrary.....		.0701
Division expense.....	.0132	.0276
Total Division.....	.5561	.7271
Administration and General Expense.....	.0315	.0557
Total cost.....	\$0.5876	\$0.7828

Dry excavation in the Pacific Division is confined to two small sections, the channel between Pedro Miguel and Miraflores locks,

and the channel below Miraflores locks. The space is restricted, the moving of tracks is constant, and the shifting of steamshovels is frequent.

The cost of blasting per yard is small in the Pacific Division because most of the material does not require blasting; the cost of loading is high because of the restricted area of work making constant shifting of cars necessary; the cost of tracks is high because they must be shifted continually; the cost of dumps is low because most of the material is used as filling, when the expense of dumping is charged to the cost of filling; the plant arbitrary forms part of the cost because the amount of excavation estimated in 1908, upon which the arbitrary charge is based, has not yet been exceeded.

From the cost statement, which forms a part of this issue of THE CANAL RECORD, comparisons may be made of costs on any parts of the work.

PERSONAL.

Col. W. C. Gorgas, accompanied by Miss Gorgas, returned to the Isthmus on the *Panama* which arrived at Cristobal on February 16.

Representatives Dudley M. Hughes, Michael F. Conry and John M. Hamilton, composing a sub-committee of the House Committee on Military Affairs, are making an inspection of the Canal construction, the fortifications and the sanitary conditions in the Canal Zone. Mrs. Hughes, Mrs. Conry and Miss Henniell Hughes are with them. Accompanying the sub-committee unofficially are Representative Charles A. Korbly, with Mrs. Korbly, and Representative D. H. Mays, with the Misses Mays. Other ladies in the Congressional party are Mrs. William A. Cullop, Mrs. Keller, Misses Callie and Lucy Smith, and Miss Alice Page.

Three Killed in Dynamite Blast.

Three men were killed and seven injured in a premature explosion of dynamite at Quebrancha quarry near Monte Lirio on the morning of February 16. The dead are Lucus Ryce, negro from Trinidad; Arthur Lee, negro from Barbadoes; William Waid, negro from Montserrat. The injured are J. McNally, white American, foreman; Charles Graves, Samuel Hull, John Smithen, James Morris, Fred Johnson, Adolphus Grubs, negro laborers.

Shooting at Gatun.

Harry Stern, an employe of the Commissary Department of the Panama railroad, died in Colon Hospital on February 11, from gunshot wounds inflicted by J. Frank Houston, at Gatun on February 8. Stern was 33 years old, single, a native of Hot Springs, Ark., and is survived by his father, Philip Stern, living there.

Missing Men.

Any one having information regarding the whereabouts of Rudolph Eilenberg, who is supposed to be on the Isthmus, is requested to communicate with his sister, Augusta Eilenberg, 285 Central Park West, New York City.

Any one having information regarding the whereabouts of John Henry Faux, of Pittsburgh, Pa., who is supposed to be on the Isthmus, and John Hope Goudy, of Grafton, West Va., who is also supposed to be on the Isthmus, is requested to communicate with the American Legation, Panama.

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

Mrs. William B. Williams, treasurer of the General Federation of Women's Clubs, was a visitor to the Canal Zone on February 14. Mrs. Williams is also in charge of the Sarah Platt Decker Endowment Fund, and advisory board member of the State Federations of New York, New Jersey, Michigan, and Panama.

The Canal Zone Federation Committee on the disposition of the Federation pictures and the books in connection with the art collection consists of Mrs. A. H. Herman of Gorgona, chairman, Mrs. Prather and Mrs. Smith, both of Empire, members. This committee is expected to report on its decision at the meeting of the Executive Board in April.

Church Notes.

A newly appointed agent for the American Bible Society, the Rev. W. J. Dunkun, of Virginia, will arrive on the Isthmus on February 20, to take charge of the society's work in Panama and the Canal Zone. Mr. Dunkun will make his headquarters at Colon. On the same day the evangelist, Mr. Hugh Taylor will arrive at Colon for a series of evangelistic meetings in the Protestant churches of the Canal Zone. Several meetings will be held at the Methodist Episcopal church in Panama.

The Fidelity Bible Class of the Empire Christian League, at the monthly social meeting in the chapel on February 11, was entertained by the senior class of girls of the Empire Sunday school. The class provided refreshments. There were about 40 present.

The Rt. Rev. Albion W. Knight, Bishop of Cuba, will arrive in Colon on Easter Day for a two week's visitation.

Catholic Missions.

At the meeting of the Altar Society of St. Ferdinand's Church, Empire, the Rev. Father Molyneaux, the missionary at present holding missions in the Zone churches, made an address on the necessity of organization among the members of churches. He also urged the bringing of the children of the church into active life in the parish. There was an election of officers for the ensuing year which resulted as follows: For president, Mrs. Golden, reelected; vice-president, Mrs. Morton; secretary, Mrs. Westberg, reelected. A special collection was taken up and the money will be used for the purpose of altar linens. The mission closed with the service on Sunday evening, February 16. Father Molyneaux is holding a mission at St. Categan's, parish, Gorgona, this week, and beginning on Sunday, February 23, he will hold a week's mission at the Church of the Immaculate Conception, Colon. There will be masses during the week at 5 and 8 a. m., and sermon and benediction every evening at 7.30. At the close of this mission Father Molyneaux will return to Philadelphia.

Christ Church, Colon.

The interior of Christ Church, Colon Beach, is being entirely renovated and repaired; the walls are freshly kalsomined and the woodwork throughout is painted. A concrete platform has been placed in the organ chamber for the new organ, and a platform with three approach steps has been constructed for the new altar. The work, including the

purchase and installation of the organ and altar, will cost about \$2,000. It is expected that the whole will be completed by Easter and that the Bishop of Cuba, who will arrive on the Isthmus on that day, will consecrate the organ and altar.

On Thursday, March 6, a quiet day for women will be observed at Christ Church. Members of Altar Guilds and other church societies are invited to be present. The day will begin with a celebration of the Holy Communion at 9.15 to be followed by a service of thanksgiving, an address on the meaning of the service and a meditation. At noon there will be an hour's recess for light refreshments. The afternoon service will consist of a second meditation followed by choral evensong. Any women wishing to attend the retreat whether or not they are affiliated with local church societies may send their names to the Rev. Edward J. Cooper, rector of Christ Church, Cristobal Post Office.

Band Concerts.

The Tenth Infantry will be encamped at Pedro Miguel on February 21 and 22, and at Corozal on February 24, and while at those places the regiment band will give a concert on the afternoon of February 22 at the former place and on the evening of February 24 at the latter place.

A concert will be given by the Isthmian Canal Commission Band at the Hotel Tivoli, Ancon, C. Z., on Sunday, February 23, 1913 at 8 p. m. The program follows:

1. March—2nd. Regt. Conn. N. G. Reeves
2. Selection—*The Rose Maid* (by request) Granichstaedten
3. a. *Simple Aveu* Thome
- b. *Pilgrims Chorus from Tannhauser* Wagner
4. Overture—*Martha* Flotow
5. Intermezzo—*In the Shadows* Finck
6. Popular Song—*Moonlight Bay* (by request). Wenrich
7. Waltz—*Lion and the Mouse* Bendix
8. Grand International Fantasia—*Hands*

Across the Sea Tobani

Introducing national airs of the following countries: America, Canada, Scotland, Italy, Sweden, Norway, Denmark, England, Cuba, Mexico, Austria, Ireland, Spain, Japan, Germany, Russia and France; concluding with a finale combining airs of the United States, England and Germany.

9. March—*Col. Moulton* Brooks

CHARLES E. JENNINGS, Musical Director.

The same program will be played at Cristobal on February 26, with "The Men Behind the Dirt" substituted for the last number.

Family Quarters

Applications for family quarters on file January 31, were as follows:

DISTRICT.	List No. 1.	List No. 2.
Balboa	1 (1)	49 (6)
Ancon	6 (3)	84 (18)
Ancon Hospital	1 (1)	2
Corozal	2 (2)	60 (15)
Pedro Miguel	3	44 (4)
Culebra	2 (1)	42 (9)
Empire	1	119 (19)
Las Cascadas		47 (2)
Bas Obispo		22 (1)
Gorgona		50 (75)
Gatun		92 (1)
Cristobal		139 (9)
Toro Point	1 (1)	6
Proto Bello		10 (11)
Total	17 (9)	766 (110)

NOTE—The figures in parentheses show the number of applicants already occupying regular or non-house-keeping family quarters at stations other than those at which applications are filed.

The Knights of Columbus will hold a meeting in Building No. 1, Cristobal, on Sunday, February 23 at 3.30 p. m. All members are invited to attend.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

Owing to the many excursions planned for Washington's Birthday, uncertainty as to the plans of the 10th Infantry, and lack of opportunity for practice in many localities, it has been decided to cancel the proposed athletic meet that was to have been held at Empire on February 22.

The Edith Harris Scott Company, consisting of Edith Harris Scott, reader and contralto; E. Lucille Miller, soprano; C. E. McAfee, pianist, and Ruth Thoburn, violinist, will arrive on February 27. The dates for the first engagements are as follows: Friday, February 28, Empire; Monday, March 3, Corozal; Tuesday, March 4, Cristobal; Wednesday, March 5, Gorgona; Thursday, March 6, Culebra; Friday, March 7, Gatun; Saturday, March 8, Porto Bello. Later dates will be announced in next week's CANAL RECORD.

The moving picture schedule for week February 24 to March 1 is as follows: Monday, Corozal; Tuesday, Empire; Wednesday, Culebra; Thursday, Gatun; Friday, Gorgona; Saturday, Cristobal.

COROZAL.

Music for the moving pictures Monday night was furnished by Mr. McMahon at the piano, and Mrs. A. P. Boyd sang two solos.

The regular activities have been resumed since the completion of the new floor in the assembly hall.

The refurnished bowling alleys were opened Monday, February 10. Corozal lost two out of three games to Gorgona on the Corozal alleys Saturday night, February 15.

A member's smoker will be held at the Corozal Y. M. C. A., Thursday night, February 20.

CULEBRA.

High scores in duckpins for the week are as follows: Case, 101, 107; Hill, 106; Brown, 111, 123, 102; Ketchum, 104; & Warner, 102; Durand, 102, 103; Palmer, 101.

EMPIRE.

On the evening of February 10 the remaining five couples of the married men's bowling tournament bowled their games, but none were able to beat the score made by Mr. and Mrs. Johnson on the previous Friday. The prizes for the tournament were awarded as follows. First to Mr. and Mrs. J. E. Johnson, second, to Mr. and Mrs. J. Whaler; prize to lady making the highest score, Mrs. Johnson.

Owing to illness, Mr. F. A. Gause was not able to deliver his lecture on "Abraham Lincoln" on Sunday evening, February 16. Instead a song service, with music by Gray's orchestra, was held.

A Fraternal tenpin bowling tournament will be started the first of March in which all are invited to take part.

The gymnasium class which meets twice weekly now has twenty men enrolled. Visitors are welcome.

There was an attendance of 319 at the moving picture show held Friday, February 14, the largest attendance yet reported.

GORGONA.

Three hundred and fifty attended the motion pictures on Monday evening. Mrs. Pearson sang several solos. The next show will be on Friday evening, February 21.

A musical will be given at Gorgona on Thursday evening, February 20. It will consist of chorus, duets, solos, and selections by a 15-piece orchestra.

The following are the high scores for the week in the bowling alleys: Davis, 123, 103, 111, 118, 101, 101; Keppler, 101; Sims, 110, 105, 106; King, 105, 113, 111; Misal, 103; Dehst, 110; Dunlap, 100; Gebhart, 113; Sebt, 101; Roper, 107.

The leaders in the ragtime tournament are Davis and Keppler (doubles), 612; Davis (singles), 321; Davis (high score), 125.

GATUN.

Indoor tennis will be introduced at the clubhouse just as soon as the floor lines are painted. Any member may use the court.

Two books of popular cartoons have been added to the library.

A large order of several kinds of gymnasium shoes have just been received from the States. New binders for the magazines have also been received.

At the second rehearsal of the glee club, Mr. Harry E. Ruckert was selected as its director and Mrs. Carl T. Gilbert accompanist. Several selections, from the new music recently received from the States were sung. Among the members of the club are Messrs. Arthur, Coleman, Winters, Laughlin, Miller, Wilkie, Keruish, Duer, Smith, Gilbert, Dye, Aaron, Purchase, Johnson, and Noble.

The new equipment received for the bowling alleys includes eight sets of duckpins and ten black minter-alite duckpin balls.

The third anniversary of the Gatun Y. M. C. A.

will be celebrated by a "smoker" on March 3 and a public entertainment and reception on March 4. The Gatun Woman's Club will have charge of the refreshments.

The following students are enrolled in educational classes at the Gatun Y. M. C. A.: *Spanish* (four classes, Dr. Farmer, Dr. Valleley, Messrs. Duckworth, Waid, Roberts, Goldent, Dr. Alyea, Margeson, Mead, Tharp, Seely, Mackey, Brewbaker, Dalton, Pelly, Nock, and Dr. Crandall, Mrs. Parmeter, Mrs. Waid and Mrs. Weidner. *Arithmetic* (two classes)—F. J. Sweet, Sam. King, Chris. Severn, J. Olson, L. Finlayson, Patrick. *Latin*—P. J. Flynn, K. Crowell. *French*—P. J. Flynn, K. Crowell. *Algebra*—Olson. *Spelling, English and Penmanship*—Butler. *Stenography*—Miller and Ashley. The educational program is as follows: Latin class meets Mondays and Wednesdays at 6 p. m. Spelling, English, and penmanship, Mondays and Thursdays at 7.15 p. m. Arithmetic classes meet Mondays, Tuesdays, Thursdays and Fridays at 8.15, 7, 8.15, and 7 p. m., respectively. Algebra class meets Tuesdays and Fridays at 8 p. m. Spanish class for ladies meets Tuesdays and Thursdays at 2.30 p. m. Spanish classes, Elementary, intermediate and advanced, Wednesdays and Fridays (same hours both days) at 9.30, 8.30, and 7.30 p. m. Stenography class at 7 p. m. Saturdays.

CRISTOBAL.

The local bowlers took three games from Gatun on Saturday night, by the following scores:

Gatun.				Cristobal.			
Gibson.....	82	93	75	Weston.....	81	76	86
Carlson.....	78	78	94	C. Cotton.....	77	76	89
Harper.....	89	83	72	Marquea.....	85	83	100
Morrissey.....	74	82	88	Orr.....	81	96	..
Kohl.....	69	84	67	Smith.....	83	100	83
				Bullard.....	..	..	89

Totals.... 392 420 396 407 431 447

The monthly married folks tournament will be held on the night of February 22. Entries will be limited to 12 couples. Prizes have been donated for both the lady and gentleman making the high score in each of the three games, as well as the usual gold medal for the couple with the highest pinfall for the three games. One game each of duckpins, candlepins, and Newport will be rolled.

At the moving picture show Wednesday night, February 12, there was an attendance of 195. The next show at Cristobal will be on Saturday, February 22.

PORTO BELLO.

Twenty-eight persons are enrolled in the Spanish class which meets each Tuesday and Thursday night. Mr. Dan'l A. Quayle is instructor.

About fifty persons attended the farewell reception given Miss Minnie Moon, sister of Mrs. A. C. Cornelison, Wednesday night, February 12. After a luncheon served by the ladies, Miss Moon was presented with some carved ivory as an expression of appreciation by the members of the association for interest she had shown in the social activities of the Y. M. C. A.

A picnic will be given on Washington's Birthday. After dinner a swim and athletic stunts are planned.

An Easter entertainment is being arranged by the members of the Sunday school.

Misdirected Letters.

ANCON, C. Z., February 19, 1913.

The following insufficiently address letters originating in the United States and its possessions, have been received in the office of the Director of Posts and may be secured upon request of the addressees:

Barton, Robert C.	Nix, Henry A.
Beckles, Orman	Nock, Ivan A.
Bennett, Samuel	Norwood, Mrs. Alice
Bodden, Rhoda	Oduber, P. & Co.
Bryan, Mrs. Sam. C.	O'Shea, T. P.
Burk, Wm.	Palmer, W. F.
Burns, Lawrence	Pearce, Harry A.
Byram, Mable L.	Poore, Walter Cox
Coffey, M. E.	Potter, F. W.
Copeland, W. E.	Pulsifer, Chase
Curry, Fred	Rebeck, R.
Deemer, James A.	Rhodes, Harry
Duncan, Sam	Robinette, O. M.
Eaves, Wm. R.	Rothgeb, Mrs. Emma
Engresser, C. A.	Salerno, R.
Farlee, William A.	Schnell, C. E.
Fischer, Robert	Shelton, W. J.
Gehren, M. L.	Snyder, J. A.
Gillis, W. A.	Stanton, J. A.
Gurse, Herbert	Sylvester, M.
Halman, I.	Tatman, J. F.
Hanseler, Otto	Troat, Mrs. C. L.
Hartsough, J. H.	Vernon, Mrs. E.
Heffner, Henry	Walker, Mrs. E.
Herbert, Hugh F.	Wantz, Clement
Irvine, Mrs. Della	Waring, Charles
Jones, W. C.	Watson, George
Kennedy, John	Weymouth, Mrs. E. J.
Krause, Wm.	Wheatcroft, Walter
Kussmaul, Harry	Wilkins, John
Lewis, Ray	Williamson, Dr. L. P.
Mulcare, Rev. John	Williams, Albert
Mulheran, Dan	Woolworth, P. F.
McPeake, Mrs. John	

OFFICIAL CIRCULARS.

Absence of Employes with Approval of Head of Department or Division.

CULEBRA, C. Z., February 13, 1913.

CIRCULAR No. 241-A:

Circular No. 241 provides that any absence of two or more days shall be reported to this office by letter. In the future an employe may, with the approval of the head of his department or division, absent himself without pay for a period of not more than seven days without the prior approval of this office, and such absence shall be reported to this office on Form 287 C. E. Prior authority must be obtained from this office for any absence in excess of seven days, and such absence will be shown on Daily Leave Order.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Eye and Ear Examination of Railway Employes.

CULEBRA, C. Z., February 11, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

The following rules governing the determination of visual acuity, color perception, and hearing of railway employes in the Canal Zone will govern hereafter:

Before appointment each applicant must be examined by an oculist designated by the Chairman. This examination shall determine:

1. The visual acuity as shown by reading Snellen's test types at a distance of twenty feet in a good illumination (either natural or artificial); tests to be made with each eye separately, and then with both together, and each result recorded.

2. The power of accommodation, as shown by determining the near point for each eye on the standard reading card; said near point to be 8 inches from the second line of the card.

3. Whether or not manifest hyperopia exists, as demonstrated by the "fogging method" (getting the visual acuity through convex lenses). A manifest hyperopia of more than 2 D. should exclude. A better method still would be to determine the absolute refraction in all applicants under 45 years of age by means of a retinoscopic examination under a cycloplegic. In this case a total hyperopia of more than 3 D. should exclude in classes A., B. and C.

4. The ocular muscle balance, as evidenced by the Maddox rod. Marked imbalance should disqualify in classes A., B., C., D., and E.

5. Color perception, as determined by the Holmgren woolen test and supplemented by the Williams lantern. Color blindness should disqualify in all classes.

Applicants for classes A and B must be given field tests as described below. A bracket pole with two dolls or straight poles (placed the same distance as dolls on the standard bracket pole) carrying four standard semaphore arms and lights should be used. Test made standing and candidates should approach the signals to a point where they are able to see them clearly, and promptly call changes as made in position or arms and color of lights.

The standards to be adopted should be as follows:

INDOOR TESTS.

Class "A"—

Enginemen, road service, Hostlers who run on main track; Freight Conductors:

Not less than 20-30 combined, nor less than 20-70 in either eye without glasses. Vision to be corrected to 20-20 combined with glasses.

Class "B"—

Enginemen, yard service, Hostlers, road service on main track:

Not less than 20-40 combined, nor less than 20-70 in either eye without glasses. To be capable of correction to 20-30 combined with glasses.

Class "C"—

Firemen, Trainmen, Freight Brakemen, and Switch Tenders:

Same as Class "B."

Class "D"—

Passenger Conductors, Yard Conductors, Yard Masters, and Train Baggage-men:

Not less than 20-50 combined, nor less than 20-100 in either eye without glasses. To be capable of correction to 20-40 combined with glasses. In exceptional cases a man who is practically blind in one eye may be accepted provided the other is 20-20.

Class "E"—

Station Agents, Telegraph Operators, Signal Foremen, Drawbridge Tender, and Car and Engine Inspectors:

Same as Class "B."

Class "F"—

Crossing Guards and Gate-men:

Same as Class "D."

FIELD TESTS.

Class "A"—

Enginemen, Road service, By day, bright sunshine: Without glasses, 200, 400 and 2,600 feet. With glasses 200, 400 and 5,000 feet.

By day, cloudy, by night.
Without glasses 200, 400 and 2,000 feet. With
glasses 200, 400 and 4,000 feet.
Class "B"—

Engineer Yard service—By day or night:
Without glasses 200, 400 and 800 feet. With
glasses 200, 400 and 2,600 feet.

Re-examination: All employees should be re-examined every two years. Those to whom glasses are necessary should be re-examined annually. Re-examinations should be made upon the promotion of all employees, and should conform to the regulations for the class to which he is to be promoted; also after any accident in which employees are concerned which may have been caused by defective vision, color sense, or hearing. Examination should also be made after any serious accident or illness, or severe inflammations of the eyes.

Where employees have less than normal vision and same can be improved by proper lenses, they should be required to wear their lenses constantly while on duty, and in this country amber glasses should be encouraged as a better protection to the eyes than the usual glass. All employees who wear glasses shall at all times carry an extra pair in the pocket for use in case of breakage.

Examination of hearing: Applicants must be able to repeat ordinary conversation, names, numbers, etc., when spoken in an ordinary conversational tone at a distance of 20 feet, in a quiet room. In this case the hearing should be recorded as 20-20 or normal.

Employees will not be retained in the service if hearing is less than 10-20 in each ear, but an employee with 5-20 in one ear may be retained provided he has as good as 15-20 in the better ear.

Employees with less than normal hearing should re-examine semi-annually.

The heads of departments and divisions concerned will take proper steps to carry into effect the rules relative to re-examination given above.

GEO. W. GOETHALS, Chairman.

Sale of Hotel Books Restricted.

CULEBRA, C. Z., February 17, 1913.

CIRCULAR No. 256-1:

In the future, the sale of \$4.80 hotel books will be restricted:

1. To new employees arriving on the Isthmus, to whom one book may be issued on arrival.
2. To married employees occupying Commission family quarters and employees boarding regularly at private messes who are compelled to occasionally take meals away from home on account of official business, when the request is approved by the head of the department or division.

GEO. W. GOETHALS, Chairman.

Unloading and Release of Panama Railroad Cars.

CULEBRA, C. Z., February 13, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

The Panama railroad has been handicapped for some time past in the movement of material, owing to the shortage of cars. Complaint has been frequently made that this shortage of cars is partially due to failure on the part of the Commission to promptly unload and release cars consigned to the various departments and divisions.

I desire that you issue positive instructions to all concerned that, in future, every effort must be made to promptly unload and release P. R. R. cars, and under no circumstances must cars be allowed to stand under load when it is possible by any reasonable means to effect their release.

GEO. W. GOETHALS, Chairman.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Commissary Cold Storage.

No material changes have been made in the prices of cold storage commodities sold at the Commissary stores since the last publication of the price list.

The following ships arrived at, or departed from the port of Balboa during the week ending February 15:
Arrivals—February 10, *Acapulco*, from San Francisco; February 11, *Salvadora* (tug boat), from Callao; February 11, *Ucayali*, from Valparaiso; February 12, 12 *Aysen*, from Valparaiso; February 14, *Pennsylvania*, from San Francisco.

Departures—February 9, *City of Sydney*, to San Francisco; February 9, *Pachitea*, to Mollendo; February 10, *Guatemala*, to Callao; February 10, *Quito*, to Guayaquil; February 14, *Arica*, to Guayaquil.

Rainfall from February 1 to 15, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	.08	11	.12
Balboa.....			
*Miraflores.....			
Pedro Miguel.....			
Rio Grande.....			
<i>Central Section—</i>	<i>Trace</i>		<i>Trace</i>
Culebra.....	.01	15	.01
*Camacho.....	.04	14	.04
Empire.....	.01	15	.01
Gamboa.....	.02	8	.02
*Juan Mina.....	.11	1	.16
Alhajuela.....	.11	1	.16
*El Viga.....	.02	8	.02
*Gorgona.....	.11	1	.16
*Prioles.....	.11	1	.16
*Monte Lirio.....	.10	2-15	.28
<i>Atlantic Section—</i>			
Gatun.....	.13	14	.26
*Brazos Brook.....	.09	2	.20
Colon.....	.06	7	.16
Porto Bello.....	.91	1	†1.37

*Standard rain gauge—readings at 5 p. m., daily. Automatic rain gauge at unstarred stations—values midnight to midnight. †To 5 p. m., February 14. ‡Several dates.

Stages of the Chagres

Maximum heights of the Chagres River for the week ending midnight, Saturday, February 15, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela	Gamboa.	Gatun Lake.
Sun., Feb. 9.....	126.0	92.3	48.5	48.5
Mon., Feb. 10.....	126.1	92.3	48.4	48.4
Tues., February 11.....	126.3	92.6	48.3	48.3
Wed., February 12.....	126.1	92.4	48.2	48.2
Thurs., February 13.....	126.0	92.2	48.1	48.1
Fri., February 14.....	125.9	92.2	48.1	48.1
Sat., February 15.....	125.9	92.2	48.2	48.1
Height of low water to nearest foot.....	125.0	91.0	44.0	

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon and Balboa, during the week ending February 15:

Tivives, February 9, from New York, with 1,497 sacks oats, 155 coils Manila rope, 500 pieces steel rope, 13 crates water closet parts, 10 cases hardware, for stock; 156 cases electrical material for Superintendent of Erection; 60 cases electrical material for emergency dams.

Advance, February 10, from New York, with 11 crates marble slabs, 534 crates tile slabs, 111 packages signal material, 13 pieces bridge material, 10 cases lamp globes, for Panama Railroad Company; 10 kegs bolts, 18 pieces locomotive tires, 148 barrels sand, for Mechanical Division; 15 barrels soda ash, for Sanitary Department; 11 cases coupon books, for Examiner of Accounts; 25 cases paper napkins, 9 cases oil, 26 cases files, 140 cases water coolers, 30 cases concentrated lye, 20 cases mining machinery, 83 drums calcium carbide, 750 pieces black pipe, 737 bundles sheet iron, 200 drums paint, 34 cases graphite, 30 cases sal. soda, for stock; 44 reels electric cable, for Superintendent of Erection; and a miscellaneous cargo, the whole consisting of 3,585 packages, weighing 400 tons.

Prinz Sigismund, February 11, from New York with 108 coils copper wire, 10 bundles copper wire for Mechanical Division; 30 kegs rivets, 25 cases hex nuts, 217 kegs bolts for stock.

Sarnia, February 10, from Hamburg, with 18 cases castings, for Superintendent of Erection.

Haakon VII, February 12, from Jacksonville, with 730 pieces piling, for stock; 26,790 pieces cross ties, for Panama Railroad Company.

Atenas, February 12, from New Orleans, with 1,675 pieces cross ties, 1,630 pieces yellow pine lumber, 100 bales hay, 150 casks feed, for stock.

Zacapa, February 12, from New York, with 85 barrels carbolineum, for First Division Chief Engineer's Office; 10 cases electrical material, for Mechanical Division; 15 cases hardware, for stock.

Heredia, February 13, from New Orleans, with 12,424 pieces lumber, for Mechanical Division; 2,155 pieces lumber, 1,325 pieces cross ties, 80 barrels sea coal facing, 13 cases castings, 240 cases grease, for stock.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Allianca.....	P. R. R. Saturday....	Feb. 15
Colon.....	P. R. R. Friday.....	Feb. 21
Advance.....	P. R. R. Friday.....	Feb. 28
Advance.....	P. R. R. Friday.....	Feb. 28
Panama.....	P. R. R. Friday.....	Mar. 6
Allianca.....	P. R. R. Wednesday....	Mar. 12
Colon.....	P. R. R. Tuesday.....	Mar. 18
Advance.....	P. R. R. Tuesday.....	Mar. 26
Panama.....	P. R. R. Monday.....	Mar. 31
Allianca.....	P. R. R. Saturday....	Apr. 5
Colon.....	P. R. R. Saturday....	Apr. 12
Advance.....	P. R. R. Saturday....	Apr. 15
Panama.....	P. R. R. Friday.....	Apr. 25
Allianca.....	P. R. R. Thursday....	May 1
Colon.....	P. R. R. Wednesday....	May 7
Advance.....	P. R. R. Tuesday....	May 13

CRISTOBAL TO NEW YORK.

Panama.....	P. R. R. Saturday....	Feb. 22
Allianca.....	P. R. R. Friday.....	Feb. 28
Colon.....	P. R. R. Thursday....	Mar. 6
Advance.....	P. R. R. Wednesday....	Mar. 12
Panama.....	P. R. R. Tuesday.....	Mar. 18
Allianca.....	P. R. R. Monday.....	Mar. 24
Colon.....	P. R. R. Sunday.....	Mar. 30
Advance.....	P. R. R. Monday....	Apr. 7
Panama.....	P. R. R. Saturday....	Apr. 12
Allianca.....	P. R. R. Friday.....	Apr. 18
Colon.....	P. R. R. Thursday....	Apr. 24
Advance.....	P. R. R. Thursday....	May 1
Panama.....	P. R. R. Wednesday....	May 7
Allianca.....	P. R. R. Tuesday....	May 13

NEW YORK TO COLON.

Almirante.....	U. F. C. Wednesday....	Feb. 12
Prinz Eitel Friedrich.....	H.-A. Saturday.....	Feb. 15
Carrillo.....	U. F. C. Saturday....	Feb. 15
Magdalena.....	R. M. Saturday.....	Feb. 15
Santa Marta.....	U. F. C. Wednesday....	Feb. 19
Prinz August Wilhelm H.-A.....	Saturday.....	Feb. 22
Pastores.....	U. F. C. Saturday....	Feb. 22
Metapan.....	U. F. C. Wednesday....	Feb. 26
Prinz Sigismund.....	H.-A. Saturday.....	Mar. 1
Tivives.....	U. F. C. Saturday....	Mar. 1
Tagus.....	R. M. Saturday.....	Mar. 1
Zacapa.....	U. F. C. Wednesday....	Mar. 5
Prinz Joachim.....	H.-A. Saturday.....	Mar. 8
Sixaola.....	U. F. C. Saturday....	Mar. 8
Almirante.....	U. F. C. Wednesday....	Mar. 12
Prinz Eitel Friedrich.....	H.-A. Saturday.....	Mar. 15
Oruba.....	R.-M. Saturday.....	Mar. 15
Carrillo.....	U. F. C. Saturday....	Mar. 15

COLON TO NEW YORK.

Zacapa.....	U. F. C. Thursday....	Feb. 20
Prinz Joachim.....	H.-A. Tuesday.....	Feb. 25
Sixaola.....	U. F. C. Tuesday.....	Feb. 25
Almirante.....	U. F. C. Thursday....	Feb. 27
Prinz Eitel Friedrich.....	H.-A. Monday.....	Mar. 3
Carrillo.....	U. F. C. Tuesday....	Mar. 4
Oruba.....	R. M. Tuesday.....	Mar. 4
Santa Marta.....	U. F. C. Thursday....	Mar. 6
Prinz August Wilhelm H.-A.....	Tuesday.....	Mar. 11
Metapan.....	U. F. C. Thursday....	Mar. 13
Prinz Sigismund.....	H.-A. Monday.....	Mar. 17
Tivives.....	U. F. C. Tuesday....	Mar. 18
Clyde.....	R.-M. Tuesday.....	Mar. 18

NEW ORLEANS TO COLON.

Turrialba.....	U. F. C. Saturday....	Feb. 15
Cartago.....	U. F. C. Wednesday....	Feb. 19
Abangarez.....	U. F. C. Saturday....	Feb. 22
Heredia.....	U. F. C. Wednesday....	Feb. 26
Atenas.....	U. F. C. Saturday....	Mar. 1
Parismina.....	U. F. C. Wednesday....	Mar. 5
Turrialba.....	U. F. C. Saturday....	Mar. 8

COLON TO NEW ORLEANS.

Heredia.....	U. F. C. Thursday....	Feb. 20
Parismina.....	U. F. C. Saturday....	Feb. 22
Turrialba.....	U. F. C. Thursday....	Feb. 27
Cartago.....	U. F. C. Saturday....	Mar. 1
Abangarez.....	U. F. C. Thursday....	Mar. 6
Heredia.....	U. F. C. Saturday....	Mar. 8

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays, at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays, at 3 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m. and Thursdays at 2 p. m.; for Boca de Toro, on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m.

The Panamanian Steamship Company's steamer *Panama* will sail from Panama for Aguadulce and Pedregal on March 1, 11, and 19.

STATEMENT OF
CONSTRUCTION EXPENDITURES
TO DECEMBER 31, 1912

(Part II of The Canal Record, February 19, 1913.)

STATEMENT OF CONSTRUCTION EXPENDITURES TO DECEMBER 31, 1912.

Table No. 1.

Includes administrative and general expenses, but does not include "General Items" or expenditures for sanitation, hospitals, or civil administration.

ITEMS.	SECOND QUARTER, FISCAL YEAR 1913.			TO SEPTEMBER 30, 1912			TOTAL TO DECEMBER 31, 1912.		
	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
<i>Atlantic Division—</i>									
1 Dry excavation, prism		\$3,893.17		2,181,998	\$1,454,789.95	\$0.6667	2,181,998	\$1,458,183.12	\$0.6683
2 Hydraulic excavation, prism				29,605	11,671.32	.3942	29,605	11,671.32	.3942
3 Dredging excavation, prism	2,057,403	\$81,614.95	1.852	30,140,070	7,256,019.36	.2407	32,197,473	7,637,184.31	.2372
<i>Gatun Spillway—</i>									
4 Dry excavation				1,544,202	\$1,096,180.59	\$0.7099	1,544,202	\$1,096,180.59	\$0.7099
5 Preparing foundations		\$101.00		44,266	96,774.93	2.1862	44,266	96,875.93	2.1885
6 Masonry	5,538	\$2,693.29	\$9.5149	206,081	1,636,448.09	7.9408	211,619	1,689,141.38	7.9820
7 Ironwork		\$0,840.80			125,885.94			176,226.74	
8 Back filling				24,716	12,456.18	.5400	24,716	12,456.18	.5400
9 Machinery		38,852.52			29,981.71			68,834.23	
Total		\$141,987.61			\$2,997,727.44			\$3,139,715.05	
<i>Gatun Dam—</i>									
10 Dredging excavation				38,425	\$20,041.19	\$0.5216	38,425	\$20,041.19	\$0.5216
11 Dry filling	585,729	\$277,856.46	\$0.4744	10,654,434	4,738,702.01	.4448	11,240,263	5,016,558.47	.4463
12 Hydraulic filling		9,726.95		10,728,965	3,240,353.89	.3020	10,728,965	3,230,626.94	.3011
13 Paving		4.294		40,411	14,719.69	.3642		15,192.60	
Total		\$268,602.42			\$8,013,816.78			\$8,282,419.20	
<i>Gatun Locks—</i>									
14 Dry excavation		\$7,797.54		4,555,395	\$3,080,613.71	\$0.6763	4,555,395	\$3,088,411.25	\$0.6780
15 Dredging excavation	105,978	\$9,778.19	\$0.4696	1,650,999	510,103.23	.3090	1,756,977	\$559,881.42	.3187
16 Preparing foundations, excavation	21,568	\$1,444.28	.9928	195,313	\$91,756.61	2.0029	216,881	\$413,170.89	4.9051
17 Preparing foundations, docks and	13,000	\$20,447.40	1.5729				13,000	\$20,447.40	1.5729
18 Preparing foundations, filling				40,117	15,226.73	.3796	40,117	15,226.73	.3796
19 Preparing foundations, concrete piling, (final feet)				83,670	134,572.36	1.6084	83,670	134,572.36	1.6084
20 Preparing foundations, wooden piling (final feet)	41,220	\$32,312.04	.7838	51,450	\$37,870.41	.7361	92,670	\$70,182.45	.7573
21 Filling around south approach wall, dry				7,072	\$3,777.61	.5342	7,072	\$3,777.61	.5342
22 Filling around south approach wall, hydraulic				891,495	\$94,077.49	1.582	594,495	\$94,077.49	1.582
23 Masonry	14,373	\$173,871.28	12.0971	1,894,075	\$14,115,786.10	7.4526	1,908,448	\$14,289,657.38	7.4876
24 Gates		\$145,589.19			\$1,409,315.89			\$1,554,905.08	
25 Ironwork		\$26,633.95			\$1,349,923.72			\$1,323,289.77	
26 Backfilling	94,621	\$15,799.79	.1670	1,733,493	\$928,367.41	.5355	1,828,114	\$944,167.20	.5165
27 Filling center wall		\$528.83		113,163	\$94,038.99	.8310	113,163	\$93,510.16	.8263
28 Operating machinery		\$25,770.55			\$1,085,703.39			\$1,611,473.94	
29 Emergency Dams		\$316,319.68			\$17,070.17			\$333,389.85	
Total		\$1,281,937.16			\$23,268,203.82			\$24,550,140.98	
<i>Gatun power plant (permanent)</i>									
30 Dry excavation		\$13.14		87,067	\$35,297.31	\$0.4064	87,067	\$35,310.45	\$0.4056
31 Preparing foundations	4,012	\$10,061.91	\$2.5079	6,633	\$7,258.12	1.0942	10,645	\$17,320.03	1.6271
32 Masonry	483	\$7,139.28	15.7600	196	\$2,486.80	12.6877	649	\$9,626.08	14.8322
33 Machinery		\$147,371.28			\$35,431.37			\$182,802.65	
34 Transmission line		\$37.73						\$37.73	
Total		\$164,623.84			\$80,473.60			\$245,096.94	
<i>Gatun-Mindi Levee—</i>									
35 Dry fill				177,158	\$68,985.15	\$0.3894	177,158	\$68,985.15	\$0.3894
36 Hydraulic fill				20,398	\$3,483.32	.1708	20,398	\$3,483.32	.1708
Total					\$72,468.47			\$72,468.47	
37 Clearing drift in Gatun Lake		\$3,156.99						\$3,156.99	
38 Colon breakwater	42,736	\$233,170.75	\$5.4561	911,784	\$1,862,718.43	\$2.0429	954,520	\$2,095,889.18	\$2.1958
39 Terminal facilities—Cristobal		\$4,924.98						\$4,924.98	
Total construction cost, Atlantic Division		\$2,482,961.87			\$45,017,889.17			\$47,500,850.54	
40 Plant and equipment to be absorbed in construction costs after Dec. 31 1912.								\$843,591.98	
Total expenditures, Atlantic Division								\$48,344,442.52	
<i>Central Division—</i>									
41 Dry excavation, prism	3,161,001	\$1,857,517.72	\$0.5876	97,754,891	\$78,190,560.40	\$0.7999	100,915,892	\$80,048,078.12	\$0.7932
42 Clearing Canal line, without excavation, (acres)				2,280	\$141,426.75	62.0293	2,280	\$141,426.75	62.0293
43 Dredging excavation					\$9,798.40			\$9,798.40	
44 Masonry				1,271	\$8,353.66	6.5725	1,271	\$8,353.66	6.5725
45 Masonry, cement gun facing (sq. yds.)				4,240	\$4,079.11	.9598	4,240	\$4,079.11	.9598
Total construction cost Central Division		\$1,857,517.72			\$78,354,218.32			\$80,211,736.04	
46 Plant and equipment to be absorbed in construction costs after Dec. 31, 1912								\$39,232.63*	
Total expenditures, Central Division								\$80,172,503.41	
<i>Pacific Division—</i>									
47 Dry excavation, prism	759,985	\$594,917.14	\$0.7828	1,781,551	\$1,461,771.68	\$0.8205	2,541,536	\$2,056,688.82	\$0.8092
48 Dredging excavation, prism	1,145,483	\$391,778.89	.3420	33,483,105	\$8,137,761.07	.2430	34,628,588	\$8,529,539.96	.2463
49 Hydraulic excavation, prism	174,263	\$174,880.72	1.0035	1,375,641	\$946,026.63	.6877	1,549,904	\$1,120,907.35	.7232
<i>Pedro Miguel Dam</i>									
50 Masonry	40	\$1,277.17	31.9293	897	\$4,400.98	\$4.9063	937	\$5,678.15	\$6.0599
51 Dry excavation	930	\$4,241.22	4.5607	9,241	\$15,161.97	1.6407	10,171	\$19,403.19	1.9077
52 Dry filling	45,993	\$14,041.72	.3053	624,687	\$313,042.32	.5011	670,680	\$327,084.04	.4877
Total		\$19,560.11			\$332,605.27			\$352,165.38	
<i>Pedro Miguel Lock—</i>									
53 Dry excavation		\$69.65		1,133,280	\$1,031,492.51	\$0.9102	1,133,280	\$1,031,422.86	\$0.9101
54 Preparing foundation	5,506	\$14,036.47	\$2.5493	167,174	\$452,342.30	2.7088	172,680	\$466,378.77	2.7008
55 Masonry	20,049	\$144,238.38	7.1938	868,475	\$5,007,702.12	5.7661	888,524	\$5,151,930.50	5.7983
56 Gates		\$28,955.40			\$31,773.95			\$86,729.35	
57 Ironwork		\$8,665.31			\$51,943.72			\$60,809.03	
58 Backfilling	28,114	\$22,471.70	.7826	675,491	\$267,290.55	.3957	704,205	\$289,762.25	.4115
59 Filling center wall	34,914	\$18,839.65	.5396	35,828	\$29,789.81	.7668	70,742	\$48,629.46	.6874
60 Operating machinery		\$361,119.86			\$504,509.87			\$865,629.73	
61 Emergency dams		\$29,927.21						\$29,927.21	
Total		\$628,374.33			\$8,776,844.83			\$9,405,219.16	
<i>Miraflores East Dam—</i>									
62 Excavation	12,765	\$24,892.54		3,000	\$26,361.32	\$8.7871	15,765	\$51,253.86	
<i>Miraflores West Dam</i>									
63 Dry filling	145,865	\$58,579.79	\$0.4016	1,342,554	\$671,625.77	\$0.5003	1,488,419	\$730,255.56	\$0.4886
64 Hydraulic filling		\$1,802.37			\$37,971.39			\$39,473.76	
65 Masonry, core wall	440	\$1,483.53	3.3717	150	\$1,184.90	7.8993	590	\$2,668.43	4.5228
66 Dry excavation	530	\$1,520.93	2.8697	1,333	\$21,731.81	16.3029	1,863	\$23,252.74	12.4813
Total		\$63,086.62			\$732,563.87			\$795,650.49	

*Denotes credit.

(Table 1—Continued)

ITEMS.	SECOND QUARTER, FISCAL YEAR 1913.			TO SEPTEMBER 30, 1912.			TOTAL TO DECEMBER 31, 1912.		
	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
Miraflores Spillway—									
67 Iron work.....		\$29,903.07			\$21,191.00			\$51,094.07	
Miraflores Locks—									
68 Dry excavation, diversions.....				5,885	\$2,028.98	\$0.3448	5,885	\$2,028.98	\$0.3448
69 Dry excavation, in locks.....		\$1,367.28		2,222.582	2,064,655.73	.9289	2,222.582	2,063,288.45	.9283
70 Dredging excavation.....				309,647	142,379.66	.4598	309,647	142,379.66	.4598
71 Hydraulic excavation.....				332,703	195,299.02	.5870	332,703	195,299.02	.5870
72 Preparing foundations, excavation.....	20,060	44,770.18	\$2.2318	332,703	715,035.38	1.8696	402,504	759,805.56	1.8877
73 Preparing foundations, wooden piles (lin feet).....	13,440	2,652.37	.1973	17,885	56,274.71	3.1465	31,325	58,927.08	1.8812
74 Masonry.....	142,445	870,042.47	6.1079	1,213,684	6,246,374.53	5.1466	1,356,129	7,116,417.00	5.2476
75 Gates.....		186,727.18			441,730.81			628,457.99	
76 Iron work.....		8,153.53			850,973.31			859,126.84	
77 Backfilling.....	232,767	96,984.79	.4167	1,275,163	446,211.54	.3499	1,507,930	543,196.33	.3602
78 Filling center wall.....	3,893	5,326.52	1.3682	16,119	21,027.01	1.3045	20,012	26,353.53	1.3169
79 Operating machinery.....		347,743.68			289,491.73			637,235.41	
80 Emergency dams.....		15,995.18						15,995.18	
Total.....		\$1,577,028.69			\$11,471,482.41			\$13,048,511.03	
La Boca Locks and Dams—(abandoned).....									
81 Dry excavation.....				78,233	\$158,343.29	\$2.0240	78,233	\$158,343.29	\$2.0240
82 Construction dam.....					315,350.07			315,350.07	
83 Construction locks.....					159,306.40			159,306.40	
Total.....					\$632,999.76			\$632,999.76	
84 Naos Island breakwater.....	272,268	\$48,026.07	\$0.1764	848,965	\$252,092.82	\$0.2969	1,121,233	\$300,118.89	\$0.2677
85 Terminal Facilities—Balboa.....		289,271.90			446,737.79			736,009.69	
Total construction cost, Pacific Division.....		\$3,841,720.01			\$33,238,438.45			\$37,080,158.46	
86 Plant and equipment to be absorbed in construction costs after Dec. 31, 1912.....								\$1,734,828.08	
Total expenditures, Pacific Division.....								\$38,814,986.54	
87 Lighting and buoying canal.....		\$20,657.39			\$178,817.54			\$199,474.93	
88 Permanent buildings.....		6,466.99						6,466.99	
89 Electric transmission line.....		619.26						619.26	
Total expenditures, constr. and eng'n'g.....								\$167,538,493.65	

Item No. 43—Central Division Dredging Excavation Prism, preliminary surveys.
 Item No. 45—Represents operation of cement gun used in facing walls of the Cut.
 Item No. 64—Pacific Division, Miraflores Dam, Hydraulic Filling. Expenditures represent cost of pipe lines, flumes, etc. 661,048 cubic yards have been deposited in the dams from dredges and hydraulic excavation in lock chambers and in prism below the locks. The expense thereof has been charged to excavation.
 Items Nos. 81, 82, 83—Pacific Division, La Boca Locks and Dams. This expense was incurred prior to the adoption of Miraflores as the site for the lower locks and dam at the Pacific entrance of the Canal.
 Item No. 84—Naos Island Breakwater. Though shown under Pacific Division, the breakwater is being constructed entirely by the Central Division with material from the Cut. Only the excess cost of dumping here as compared with regular dumps is charged to this item.
 Items Nos. 46, 46, and 86—The expenditures from plant and Equipment are absorbed in the construction costs on the basis of estimated cost of the plant and estimated quantities of work to be done. The amounts shown under these items represent the balances which were to be absorbed into construction costs after December 31, 1912.
 General—When the excavated material is used for filling, such as dams, back-filling, etc., the cost of dumping only is charged to the item benefited, other expenses being charged to Excavation.

DAM CONSTRUCTION.

Table No. 2.

Detailed cost per cubic yard for quarter ending December 31, 1912.

	GATUN DAM.				PEDRO MIGUEL DAM.				MIRAFLORES DAM.			
	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.
Excavation—Quantities—cubic yards.....					220	45	665	930	7,206	1,320	4,769	13,295
Drilling.....											\$0.1900	\$0.0678
Blasting.....									\$0.0255		.0025	.0025
Excavation by hand.....					\$8.2140	\$9.9847	\$1.4280	\$3.4473	\$0.2227	1.7776	.9730	.6462
Transportation.....											.0709	.0254
Tracks.....									.3286	.0211	.5608	.3835
Trestles.....											.3709	.1332
Pumping.....									.0614	.0579	.0962	.0416
Maintenance of equipment.....					1.0260	.8227	.2875	.4881	.0783	.0949	.2618	.1460
Plant arbitrary.....									.1635	.2116	.2105	.1852
Excavation by pumps.....									.2368	.1867	.0015	.1474
Division expense.....					.7495	.7411	.0640	.2590	.0416	.1534	.0934	.0713
Total division cost.....					\$9.9895	\$11.5485	\$1.7795	\$4.1944	\$1.0729	\$2.5287	\$2.8350	\$1.8495
Administrative and general expense.....					.8117	1.1380	.1668	.366	.0448	.1881	.2627	.1372
Total cost.....					10.8012	12.6865	\$1.9463	\$4.5607	\$1.1177	\$2.7168	\$3.0977	\$1.9867
Masonry—Quantities—cubic yards.....					40			40			440	440
Concrete.....					\$11.1518			\$26.6075			\$2.4887	\$2.4887
Plant arbitrary.....					.7000			.7000			.5400	.5400
Maintenance of equipment.....					.1170			.1170			.1096	.1096
Division expense.....					.7865			1.8258			.0822	.0822
Total division cost.....					\$12.7553			\$29.2503			\$3.2205	\$3.2205
Administrative and general expenses.....					.9817			2.6790			.1511	.1511
Total cost.....					\$13.7370			\$31.9293			\$3.3716	\$3.3716
Dry Fill—Quantities—cubic yards.....	258,999	184,485	142,245	585,729	16,267	18,030	11,696	45,993	57,265	46,115	42,485	145,865
Clearing site.....												
Excavation.....	\$0.1171	\$0.0763	\$0.0771	\$0.0945								
Tracks.....	.0698	.1045	.0855	.0845	\$0.0764	\$0.1091	\$0.1186	\$0.0999	\$0.0732	\$0.0931	\$0.1519	\$0.1024
Trestles.....	.0003	.0001		.0002								
Transportation.....	.0758	.0930	.0776	.0817	.0736	.0511	.0409	.0565	.0685	.0764	.0613	.0689
Filling.....	.0714	.1222	.1067	.0959	.0716	.0811	.0566	.0715	.0527	.0684	.0739	.0638
Maintenance of equipment.....	.0524	.0364	.0577	.0487	.0567	.0327	.0371	.0423	.0498	.0443	.0511	.0485
Plant arbitrary.....									.0800	.0800	.0800	.0800
Division expense.....	.0318	.0326	.0268	.0309	.0164	.0156	.0116	.0149	.0157	.0158	.0140	.0152
Total division cost.....	\$0.4186	\$0.4651	\$0.4314	\$0.4364	\$0.2947	\$0.2896	\$0.2648	\$0.2851	\$0.3399	\$0.3780	\$0.4322	\$0.3788
Administrative and general expense.....	.0305	.0456	.0419	.0380	.0133	.0242	.0236	.0202	.0135	.0261	.0317	.0228
Total cost.....	\$0.4491	\$0.5107	\$0.4733	\$0.4744	\$0.3080	\$0.3138	\$0.2884	\$0.3053	\$0.3534	\$0.4041	\$0.4639	\$0.4016

Table No. 2—Continued

	GATUN DAM.				PEDRO MIGUEL DAM.				MIRAFLORES DAM.			
	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.
Hydraulic Fill—Quantities—cubic yards												
Clearing site												
Clearing for dredge												
Dredging												
Relay pumps												
Pipe lines												
Wood flumes												
Power												
Small boats												
Maintenance of equipment												
Plant arbitrary												
Division expense												
Total division cost												
Administrative and general expense												
Total cost												

LOCKS AND SPILLWAYS CONSTRUCTION.

Table No. 3.

Detailed cost per cubic yard for quarter ending December 31 1912

ITEMS.	GATUN SPILLWAY				GATUN LOCKS				PEDRO MIGUEL LOCKS.				MIRAFLORES LOCKS.			
	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.
Dry excavation—Quantities—cubic yards																
Drilling																
Blasting																
Loading by power																
Tracks																
Transportation																
Dumps																
Trestles																
Pumps																
Power																
Maintenance of equipment																
Plant arbitrary																
Division expense																
Total division cost																
Admin. and general expense																
Total cost																
Dredging—Excavation—Quantities cubic yards				105,978				105,978								
Operation Dredges				\$0.2068				\$0.2068								
Repairs Dredges				.0660				.0732								
Pipe Lines				.0078				.0078								
Coffer Dams																
Dykes																
Drilling																
Blasting																
Plant Arbitrary				.1470				.1470								
Division expense				.0193				.0193								
Total Division Cost				.4469				\$0.4541								
Admin. and Gen. Expense				.0156				.0155								
Total Cost				\$0.4625				\$0.4696								
Preparing foundations, excavation—Quantities—cubic yards					1,353	20,215	21,568		1,037	2,352	2,117	5,506	4,464	5,594	10,002	20,060
Drilling							\$0.0111	\$0.0104	\$0.3511	\$0.0667	\$0.3587	\$0.2325	\$0.0145	\$0.0088	\$0.0015	\$0.0064
Blasting							.0323	.0302	.4496	.0818	*.1229	.0724				.0180
Loading by power					\$3.1226	.0988	.2885		.0757	.1084	.0740					
Loading by hand					1.1059	.1447	.2050	2.3196	1.0901	.3624	1.0419	1.5936	1.4234	.0362	1.2382	
Transportation					.3172	.0963	.1102	.4544	.1124	.1318	.1843	.0018	.0031		.0371	
Tracks					.3400	.0491	.0673	.3292	.2201	.2314	.2449	.1806	.2337	.9760	.1868	
Dumps														.0719		
Pumps								.0879	.0528	.1482	.0904	.1719	.0976	.1632	.0778	
Coffer dams														.0248		
Maintenance of equipment						.9724	.0729	.1294	.6275	.3058	.2115	.3302	.1683	.1131	.2019	.1697
Plant arbitrary													.2102	.2101	.2100	.2101
Division expense						.4633	.0.90	.0562	.3083	.0975	.0671	.1255	.1772	.1347	.0738	.1138
Total division cost						\$6.3214	\$0.5342	\$0.8972	\$4.8976	\$2.1029	\$1.4966	\$2.3961	\$2.5181	\$2.2245	\$1.7593	\$2.0579
Admin. and general expense						.6355	.0595	.0956	*.1049	.2267	.1979	.1532	.0926	.2456	.1762	.1739
Total cost						\$6.9569	\$0.5937	\$0.9928	\$4.7927	\$2.3996	\$1.6945	\$2.5493	\$2.6107	\$2.4701	\$1.9295	\$2.2318
Preparing foundations, coffer piling—Quantities—lin ft							41,220	41,220					1,295	12,145		13,440
Wooden piles in place							\$0.5244	\$0.6672					\$1.0225	\$0.0884		\$0.1783
Maintenance of equipment							.0017	.0017								
Division expense							.0135	.0149					.0335	.0062		.0089
Total division cost							\$0.5396	\$0.6837					\$1.0560	\$0.0946		\$0.1872
Admin. and general expense							.0985	.1000					.0007	.0111		.0101
Total cost							\$0.6381	\$0.7835					\$1.0567	\$0.1057		\$0.1973
Masonry.																
Cement—Quantities—cubic yds	1,303	855	3,017	5,175	2,685	5,114	4,043	11,842	6,362	7,541	5,508	19,411	49,003	34,784	42,763	126,550
Cement	\$1.4435	\$1.6194	\$1.4637	\$1.4844	\$1.3733	\$1.3265	\$1.3884	\$1.3582	\$3.4052	\$1.4754	\$1.1491	\$2.0153	\$1.9738	\$1.9308	\$1.5807	\$1.8292
Stone	1.8037	2.0035	1.8325	1.8535	1.2810	1.5921	1.8371	1.6052	.7533	.7440	.6976	.7339	.7534	.7435	.6975	.7318
Sand	.5976	.5963	.5500	.5697	.5995	.5781	.6308	.6010	.4600	.4449	.4050	.4385	.4601	.4450	.4050	.4373
Mixing	.7469	.9704	.4663	.6202	.8430	.6144	.6768	.6876	.9907	.8332	.8640	.8935	.3169	.3089	.2223	.2827
Total cost	\$4.5917	\$5.1898	\$4.3125	\$4.5278	\$4.0968	\$4.1111	\$4.5331	\$4.2520	\$5.6092	\$3.4975	\$3.1157	\$4.0812	\$3.5042	\$3.4282	\$2.9055	\$3.2810
Large Rock—Quantities—cubic yards																
Cost																

*Denotes credit.

Table No 3 (Continued)

ITEMS.	GATUN SPILLWAY.				GATUN LOCKS.				PEDRO MIGUEL LOCKS.				MIRAFLORES LOCKS			
	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.
Masonry—Quantities—cubic yards.	1,303	855	3,017	5,175	2,685	5,114	4,043	11,842	6,362	7,541	5,508	19,411	49,003	34,784	42,763	126,550
Concrete.	\$4 5917	\$5 1898	\$4 3125	\$4 5278	\$4 0968	\$4 1111	\$4 5331	\$4 2520	\$5 6092	\$3 4975	\$3 1157	\$4 0812	\$3 5042	\$3 4282	\$2 9055	\$3 2810
Large rock.	1,2802	1,4602	1,8278	1,6292	1,6778	2,5876	1,8776	2,1388	8,264	6,576	6,999	7,249	5,463	4,805	4,716	5,030
Wood forms.	8598	2 0311	8536	1 0497	1 6737	1 0257	1 2654	1 2545	3,774	4,269	5,488	4,453	4,652	4,336	3,824	4,286
Reinforcements.					1130	1187	5059	2,496	0,579	0,529	1,484	0,816	0,329	0,362	0,249	0,311
Pumps.					1892	1181	1824	1,562			0,001	0,816	0,329	0,476	1,458	0,398
Power.																
Coffer dams.		* 3039		* 0502												
Maintenance of equipment.	2388	2724	2184	2324	7312	5506	0360	4150	0,998	0,644	1,310	0,949	1,586	2,078	0,413	1,678
Plant arbitrary.	5340	5340	5340	5340	9380	9380	9380	9380	7,000	7,000	7,000	7,000	5,407	5,406	5,405	5,406
Division expense.	3244	2002	1812	2204	5529	3971	2196	3718	1,553	1,669	1,266	1,518	1,315	1,195	0,721	1,081
Total division cost.	\$7 8289	\$9 3838	\$7 9275	\$8 1433	\$9 9726	\$9 8469	\$9 5580	\$9 7768	\$7 8260	\$5 5662	\$5 4705	\$6 2797	\$5 4131	\$5 2942	\$4 6070	\$5 1080
Admin. and general expense.	8697	8983	6560	7502	1 9543	1 1801	8510	1 2433	* 1986	5131	5297	2846	2,613	4,171	3,522	3,349
Total cost.	\$8 6986	10 2821	\$8 5841	\$8 8935	11 9269	11 0270	10 4090	11 0201	\$7 6274	\$6 0793	\$6 0002	\$6 5643	\$5 6744	\$5 7113	\$4 9592	\$5 4429
Masonry, reinforced—Quantities—cubic yards.	314		49	363	567	915	1,049	2,531	240	124	274	638	5,807	5,102	4,986	15,895
Cement.	\$1 4414		\$1 4676	\$1 4450	\$1 6114	\$1 5117	\$2 1506	\$1 7989	\$3 7201	\$1 9865	\$0 7227	\$2 0958	\$2 0519	\$1 9786	\$2 0921	\$2 0410
Stone.	1,8020		1,8280	1,8055	1,2774	1,1808	9508	1,1071	6,953	6,645	6,734	6,799	7,223	7,120	6,680	7,020
Sand.	5996		5484	5927	6594	6647	6187	6083	5060	5168	4464	4825	4639	4481	4084	4414
Fixing.	7538		5933	7321	1 4188	8602	7976	9594	1 5267	3 6634	1 7193	2 0247	8156	7321	5735	7129
Wood forms.	0475		37 1786	5 0597	7 5541	3 4310	3 6257	4 4352	1 9078	2 3453	2 5465	2 2671	2 9329	2 9472	2 9038	2 9283
Steel forms.					2573	1340	1579	1716					0148	0214	* 0031	* 0010
Power.																0165
Placing.	4338		1 3667	5597	2 5873	2 3539	3 2531	2 7789	12 6267	10 7723	4 0171	8 5884	1 1354	1 0816	9292	1 0535
Reinforcements.	2012		32 0088	4 4948	2 3664	0372	0193	5516	1 5033	1 8706	10 8020	5 5486	1 4707	1 5135	1 2016	1 4000
Pumps.									0542	0491	1463	0928	0329	0361	0248	0314
Maintenance of equipment.	2414		2302	2399	1 1458	1 0072	7013	9115	1 0410	0571	1060	4482	1532	1117	0915	1206
Plant arbitrary.	5340		5340	5340	9380	9380	9380	9380	6563	6492	6923	6704	5386	5390	5399	5391
Division expense.	1684		2 4493	4763	1 3472	4876	6706	7560	1 3724	1 2866	6091	1 0279	5028	4292	2987	4151
Total division cost.	\$6 2231		78 2049	15 9397	21 1631	12 5063	13 8836	15 0165	25 6098	23 8614	22 4811	23 9263	10 8350	10 5505	\$9 7449	10 4018
Admin. and general expense.	3168		16 0018	2 4340	3 3904	1 2886	2 1579	2 1197	1 3359	3 0906	3 0679	2 4208	9237	1 0831	1 0065	1 0008
Total cost.	\$6 5399		94 2067	18 3737	24 5535	13 7949	16 0415	17 1362	26 9457	26 9520	25 5490	26 3471	11 7587	11 6336	10 7514	11 4026
Total Masonry—Quantities—cubic yards.	1,617	855	3,066	5,538	3,252	6,029	5,092	14,373	6,602	7,665	5,782	20,049	54,810	39,886	47,749	142,445
Total cost.	\$8 2794	10 2821	\$9 9525	\$9 5149	14 1284	11 4471	11 5694	12 0971	\$8 3296	\$6 4169	\$6 9267	\$7 1938	\$6 3191	\$6 4689	\$5 5640	\$6 1079
Back filling—Quantities—cubic yards.					48,978	12,411	33,232	94,621	13,059	4,659	10,996	28,714	70,185	67,497	95,085	232,767
Drilling.					\$0 0171	\$0 0073	\$0 0030	\$0 0109								
Blasting.					0328	0155	0207	0262								
Loading.					0239	0113	0478	0306								
Tracks.					0480	0242	* 7285	* 2279	\$0 1349	\$0 2953	\$0 1860	\$0 1805	\$0 1123	\$0 1299	\$0 0771	\$0 1030
Transportation.					0975	3059	0859	1208	1098	3160	1477	1578	0787	0681	0586	0674
Filling.					0767	1133	1039	0911	1231	3235	1605	1700	0853	0734	0652	0736
Maintenance of equipment.					0467	0257	0609	0490	0696	1572	1039	0969	0471	0330	0338	0377
Plant arbitrary.									0800	0800	0800	0800	0900	0900	0900	0900
Division expense.					0307	0371	0201	0278	0283	0636	0241	0324	0225	0188	0102	0164
Total division cost.					\$0 3734	\$0 5403	* 0 3862	\$0 1285	\$0 5457	\$1 2356	\$0 7022	\$0 7176	\$0 4359	\$0 4132	\$0 3349	\$0 3881
Admin. and general expense.					0340	0674	0343	0385	0266	1476	0757	0650	0267	0346	0257	0286
Total cost.					\$0 4074	\$0 6077	* 0 3519	\$0 1670	\$0 5723	\$1 3832	\$0 7779	\$0 7826	\$0 4626	\$0 4478	\$0 3606	\$0 4167
Filling center wall—Quantities—cubic yards.									16,897	14,597	3,420	34,914	925	1,414	1,554	3,893
Loading.									\$0 0769	\$0 1794	\$0 2638	\$0 1380				
Tracks.									0744	1187	0198	0876	\$0 0086			\$0 0020
Transportation.									0723	0870	2761	0984	1 7737	\$1 2148	\$0 3147	0983
Filling.															0045	0018
Power.									0546	0623	1979	0718	1494	1196	0241	0886
Maintenance of equipment.									0800	0800	0800	0800	0900	0902	0901	0901
Plant arbitrary.									0129	0191	0315	0174	1393	0982	0205	0769
Division expense.																
Total division cost.									\$0 3711	\$0 5465	\$0 8691	\$0 4932	\$2 1610	\$1 5228	\$0 4539	\$1 2477
Admin. and general expense.									0260	0579	0979	0464	1759	1688	0435	1205
Total cost.									\$0 3971	\$0 6044	\$0 9670	\$0 5396	\$2 3369	\$1 6916	\$0 4974	\$1 3682
Preparing foundations, dredging—Quantities—cubic yards.						8,000	5,000	13,000								
Dredging.						\$1 1499	\$0 3670	\$0 8488								
Sluicing.						3393	2923	3213								
Pipe lines.						0812	0140	0553								
Maintenance of equipment.						1084	1311	1172								
Division expense.						1083	082	0867								
Total division cost.						\$1 7871	\$0 8566	\$1 4293								
Admin. and general expense.						1846	0781	1436								
Total cost.						\$1 9717	\$0 9347	\$1 5729								

*Indicates credit.

DRY EXCAVATION—PRISM.

Table No. 4.

Detailed cost per cubic yard for quarter ending December 31, 1912.

ITEMS.	ATLANTIC DIVISION.				CENTRAL DIVISION.				PACIFIC DIVISION.			
	Oct.	Nov.	Dec.	Total	Oct.	Nov.	Dec.	Total	Oct.	Nov.	Dec.	Total.
Dry excavation—Quantities—cubic yards...					1,113,420	973,071	1,074,510	3,161,001	219,959	237,578	302,448	759,985
Clearing					\$0.0657	\$0.0691	\$0.0601	\$0.0648	\$0.0926	\$0.0949	\$0.0745	\$0.0862
Drilling					.0514	.0532	.0534	.0526	.0317	.0099	.0092	.0159
Blasting					.0550	.0566	.0529	.0548	.0979	.0947	.0909	.0941
Loading					.0912	.1005	.0959	.0957	.2121	.2147	.1815	.2008
Tracks					.1015	.0879	.0806	.0902	.0980	.1014	.0926	.0969
Transportation					.0507	.0697	.0632	.0608	.0192	.0142	.0184	.0173
Dumps					.0085	.0126	.0057	.0088	.0349	.0377	.0227	.0309
Maintenance of equipment					.1075	.1277	.1118	.1152	.1018	.0707	.0900	.0873
Plant arbitrary									.0702	.0701	.0701	.0701
Division expense					.0140	.0142	.0114	.0132	.0376	.0285	.0195	.0276
Total division cost					\$0.5455	\$0.5915	\$0.5350	\$0.5561	\$0.7960	\$0.7368	\$0.6694	\$0.7271
Administrative and general expense					.0186	.0400	.0372	.0315	.0506	.0625	.0540	.0557
Total cost					\$0.5641	\$0.6315	\$0.5722	\$0.5876	\$0.8466	\$0.7993	\$0.7234	\$0.7828

DREDGING EXCAVATION—PRISM.

Table No. 5.

Detailed cost per cubic yard for quarter ending December 1912.

ITEMS.	ATLANTIC DIVISION.								PACIFIC DIVISION.							
	October.		November.		December.		Total.		October.		November.		December.		Total.	
	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.
Clearing	306,931	\$0.0338	330,377	\$0.0296	246,765	\$0.0375	884,073	\$0.0333	188,414	\$0.0468	174,779	\$0.0565	349,747	\$0.0013	349,747	\$0.0013
Op'n seagoing suction dredge	306,931	.0036	330,377	.0039	246,765	.0135	884,073	.0065	188,414	.0020	174,779	.0025	349,747	.0011	349,747	.0011
R'prs, seagoing suction dredge	55,315	.1138	43,539	.1780	39,769	.2114	138,623	.1620	51,115	.1166	84,728	.0973	68,304	.1277	204,147	.1123
Repairs, small ladder dredges	55,315	.1058	43,539	.0653	39,769	.0942	138,623	.0897	51,115	.1797	84,728	.0619	68,304	.0936	204,147	.1020
Op'n, 5-yard, ladder dredge									87,609	.0898	156,946	.0605	112,200	.0750	356,755	.0723
Repairs, 5-yard ladder dredge									87,609	.0882	156,946	.0210	112,200	.0443	356,755	.0448
Operation, dipper dredges	13,829	.0772	35,719	.0890	47,071	.0785	96,619	.0822	19,625	.2190	32,520	.1205	10,778	.1389	62,923	.1544
Repairs, dipper dredges	13,829	*.0919	35,719	.0538	47,071	.0619	96,619	*.0029	19,625	.0942	32,520	.1104	10,778	.0683	62,923	.0982
Operation, pipe line dredges	196,708	.0737	260,612	.0610	480,768	.0444	938,088	.0551								
Repairs, pipe line dredges	196,708	.0439	260,612	.0466	480,768	.0216	938,088	.0332								
Pipe lines	196,708	.0692	260,612	.0181	480,768	.0002	938,088	.0197								
Dykes			260,612	.0028			260,612	.0028	73,901	.0381					73,901	*.0511
Op'n, tugs, claps and scows	69,144	.0841	79,258	.1109	86,840	.0860	235,242	.0938	158,349	.0018	274,194	.0600	191,282	.0948	623,825	.0814
R'prs, tugs, claps and scows	69,144	.1083	79,258	.0292	86,840	.0434	235,242	.0577	158,349	.0949	274,194	.0288	191,282	.0227	623,825	.0437
Drilling	53,228	.0434	60,767	.0415	68,088	.0339	182,083	.0363	73,901	.1221	101,626	.0976	98,985	.1341	274,512	.1173
Blasting	53,228	.1328	60,767	.1070	68,088	.1006	182,083	.1121	73,901	.1785	101,626	.1440	98,985	.1369	274,512	.1507
Operation, drill barges									73,901	.1047	101,626	.0897	98,985	.0813	274,512	.0907
Repairs, drill barges									73,901	.0131	101,626	.0066	98,985	.0093	274,512	.0071
Operation, rock breakers									73,901	.0161	101,626	.0130	98,985	.0140	274,512	.0138
Repairs, rock breakers									73,901	.0497	101,626	.0006	98,985	.0021	274,512	.0144
Small boats	572,783	.0013	670,247	.0016	814,373	.0013	2,057,403	.0014	346,763	.0074	448,973	.0042	349,747	.0046	1,145,483	.0053
Repairs, misc. equipment	572,783	.0013	670,247	.0013	814,373	.0009	2,057,403	.0012	346,763	.0214	448,973	.0179	349,747	.0130	1,145,483	.0175
Plant arbitrary	572,783	.0470	670,247	.0470	814,373	.0470	2,057,403	.0470	346,763	.0074	448,973	.0057	349,747	.0074	1,145,483	.0068
Division expense	572,783	.0077	670,247	.0065	814,373	.0049	2,057,403	.0062	346,763	.0133	448,973	.0090	349,747	.0076	1,145,483	.0098
Total division cost	572,783	\$0.2010	670,247	\$0.1707	814,373	\$0.1567	2,057,403	\$0.1736	346,763	\$0.3789	448,973	\$0.2577	349,747	\$0.3163	1,145,483	\$0.3123
Admin. and general expense	572,783	.0013	670,247	.0154	814,373	.0133	2,057,403	.0117	346,763	.0257	448,973	.0288	349,747	.0349	1,145,483	.0297
Total cost	572,783	\$0.2060	670,247	\$0.1861	814,373	\$0.1700	2,057,403	\$0.1853	346,763	\$0.4046	448,973	\$0.2865	349,747	\$0.3512	1,145,483	\$0.3420
Earth excavation—per cent.	519,555	90.71	609,480	90.93	746,285	91.64	1,875,320	91.15	272,862	78.69	347,347	77.36	250,762	71.70	870,971	76.04
Rock excavation—per cent.	53,228	9.29	60,767	9.07	68,088	8.36	182,083	8.85	73,901	21.31	101,626	22.64	98,985	28.30	274,512	23.96

*Indicates Credit.

STONE PRODUCTION.

Table No. 6.

Detailed cost per cubic yard for quarter ending December 31, 1912.

	ANCON QUARRY.			
	Oct.	Nov.	Dec.	Total
<i>Quarrying—Quantities—cubic yards</i>	61,604	54,048	56,620	172,272
Stripping.....	\$0.0002	\$0.0003	\$0.0003	\$0.0003
Drilling.....	.0611	.0619	.0649	.0626
Blasting.....	.0386	.0536	.0489	.0467
Loading.....	.0368	.0440	.0416	.0406
Transportation.....	.0508	.0562	.0550	.0539
Tracks.....	.0303	.0320	.0286	.0302
Maintenance of equipment.....	.0473	.0936	.0316	.0567
Plant arbitrary.....	.1600	.1600	.1600	.1600
Total.....	\$0.4251	\$0.5016	\$0.4309	\$0.4510
<i>Crushing—</i>				
Operation crushers.....	\$0.0156	\$0.0241	\$0.0178	\$0.0190
Stone bins and conveyors.....	.0039	.0045	.0040	.0041
Power.....	.0190	.0184	.0202	.0192
Maintenance of equipment.....	.0447	.0076	.0566	.0370
Plant arbitrary.....	.0428	.0426	.0428	.0427
Total.....	\$0.1260	\$0.0972	\$0.1414	\$0.1220
<i>Rail transportation to storage—</i>				
Operation of trains.....	\$0.0467	\$0.0546	\$0.0484	\$0.0497
Repairs to tracks.....				
Dumping in storage.....	.0200	.0424	.0104	.0239
Maintenance of equipment.....	.0271	.0245	.0252	.0257
Plant arbitrary.....	.0600	.0600	.0600	.0600
Total.....	\$0.1538	\$0.1815	\$0.1440	\$0.1593
Division expense.....	\$0.0229	\$0.0228	\$0.0146	\$0.0201
Total cost in storage.....	\$0.7278	\$0.8031	\$0.7309	\$0.7524

SAND PRODUCTION.

Table No. 7.

Detailed cost per cubic yard for quarter ending December 31, 1912.

ITEMS.	GATUN.				CHAMÉ.			
	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total
<i>Dredging—Quantities—cubic yards</i>					41,986	35,821	38,870	116,677
Operation, dredges.....					\$0.0913	\$0.0931	\$0.0825	\$0.0889
Maintenance of equipment.....					.0168	.0265	.0215	.0214
Total.....					\$0.1081	\$0.1196	\$0.1040	\$0.1103
Plant arbitrary.....					\$0.0100	\$0.0100	\$0.0100	\$0.0100
Total cost of production.....					\$0.1181	\$0.1296	\$0.1140	\$0.1203
<i>Towing—Quantities—cubic yards</i>					41,986	35,821	38,870	116,677
Operation, tugs and barges.....					\$0.0905	\$0.0951	\$0.0898	\$0.0917
Maintenance of equipment.....					.0489	.0362	.0334	.0398
Plant arbitrary.....					.0200	.0200	.0200	.0200
Total.....					\$0.1594	\$0.1513	\$0.1432	\$0.1515
<i>Unloading—Quantities—cubic yards</i>					40,986	35,321	38,370	114,677
Operation, cableways and cranes.....					\$0.0960	\$0.1045	\$0.0861	\$0.0953
Power.....					.0182	.0187	.0179	.0183
Maintenance of equipment.....					.0295	.1285	.0366	.0624
Plant arbitrary.....					.0514	.0513	.0512	.0513
Total.....					\$0.1951	\$0.3030	\$0.1918	\$0.2273
<i>Rail Transportation to Storage—Quantities—cubic yards</i>					40,986	35,321	38,370	114,677
Operation of cranes.....								
Operation of trains.....					\$0.0484	\$0.0541	\$0.0518	\$0.0513
Repairs to tracks.....					.0309	.0243	.0271	.0276
Dumping in storage.....					.0101	.0147	.0262	.0169
Maintenance of equipment.....					.0294	.0249	.0275	.0274
Plant arbitrary.....					.0400	.0400	.0400	.0400
Total.....					\$0.1588	\$0.1580	\$0.1726	\$0.1632
Division expense.....					\$0.0236	\$0.0253	\$0.0122	\$0.0207
Total cost in storage.....					\$0.6550	\$0.7672	\$0.6338	\$0.6830

HYDRAULIC EXCAVATION—PRISM.

Table No. 8.

Detailed cost per cubic yard for quarter ending December 31, 1912.

ITEMS	ATLANTIC DIVISION.				PACIFIC DIVISION.			
	Oct.	Nov.	Dec.	Total	Oct.	Nov.	Dec.	Total
Quantities—cubic yards					88,963	85,300		174,263
Clearing								
Drilling								
Blasting								
Pumping station					\$0.0599	*\$0.0002		*\$0.0001
Pipe lines and monitors					.0450	.0207		.0552
Dredging pumps					.0287	.0216		.0331
Relay pumps								.0252
Dykes					.0120	.0102		.0110
Maintenance of equipment					.0572	.0242		.0411
Power					.1067	.0948		.1009
Plant arbitrary					.7147	.7142		.7145
Division expense					.0124	.0075		.0100
Total division cost					\$1.0366	\$0.9434		\$0.9909
Administrative and general expenses					.0108	.0146		.0126
Total cost					\$1.0474	\$0.9580		\$1.0035

*Indicates credit.

COLON BREAKWATER.

Table No. 9.

ITEMS.	COLON BREAKWATER.				ITEMS.	COLON BREAKWATER—Cont'd.			
	Oct.	Nov.	Dec.	Total.		Oct.	Nov.	Dec.	Total
Porto Bello Large Rock.					Porto Bello Large Rock—Continued.				
Quarrying—Quantities—Cubic yards	14,313	12,389	16,034	42,736	Placing—				
Stripping	\$0.4649	\$0.5729	\$0.3588	\$0.4503	Operation of floating derricks	\$0.1295	\$0.1600	\$0.1140	\$0.1326
Drilling	.1287	.1298	.0794	.1105	Maintenance, floating derricks	.2182	.0643	.0394	.1065
Blasting	.2255	.3063	.2241	.2484	Operation, cranes	.1488	.1620	.1448	.1512
Loading	.1064	.1182	.1114	.1117	Operation, trains	.0715	.0972	.0784	.0815
Transportation	.0978	.1105	.1223	.1107	Dumping	.0148	.0124	.0091	.0119
Tracks	.4637	.4287	.3418	.3877	Maintenance of equipment	.2468	.1557	.1885	.1985
Loading on barges	.1621	.1787	.1572	.1651	Plant arbitrary	.1640	.1640	.1640	.1640
Power	.1256	.0930	.1194	.1138	Total	\$0.9936	\$0.8156	\$0.7382	\$0.8462
Maintenance of equipment	.6608	.4109	.5755	.5564	Trestles	\$0.2412	\$0.1934	\$0.1680	\$0.1999
Plant arbitrary	.3010	.3010	.3010	.3010	Tug service, miscellaneous	.0854	.1545	.0833	.1046
Total	\$2.6765	\$2.6500	\$2.3909	\$2.5616	Maintenance of equipment	.0765	.1079	.0411	.0724
Towing—					Division expense	.3271	.3191	.1938	.2747
Operation, tugs and barges	\$0.3089	\$0.3405	\$0.2504	\$0.2961	Total division cost	\$5.4796	\$5.4304	\$4.4069	\$5.0628
Maintenance of equipment	.3661	.4454	.1372	.3033	Administrative and general expense	.2106	.5208	.4021	.3724
Plant arbitrary	.4040	.4040	.4040	.4040	Total cost	\$5.6902	\$5.9512	\$4.8090	\$5.4352
Total	\$1.0793	\$1.1899	\$0.7916	\$1.0034					

PERMANENT POWER HOUSE—GATUN.

Table No. 10.

	Oct.	Nov.	Dec.	Total
Dry Excavation—Quantities—Cubic yards				
Clearing				
Drilling				
Blasting				
Loading				
Tracks				
Transportation				
Maintenance of equipment				
Plant arbitrary				
Division expense				
Total division cost				
Administration and General expense				
Total cost				
Preparing Foundations—Quantities—cubic yards	1,700	850	1,462	4,012
Drilling		\$0.0089		\$0.0019
Blasting	\$0.0038	.0272	\$0.0290	.0180
Loading by power	.1239	.2621	.1753	.1719
Loading by hand	1.4868	2.1210	.9408	1.4222
Tracks	.0662	.1059	.2959	.1583
Transportation			.3299	.1202
Maintenance of equipment	.1058	.1044	.1581	.1245
Plant Arbitrary	.1364			.0578
Division expense	.2279	.2684	.1527	.2091
Total division cost	\$2.1508	\$2.8979	\$2.0817	\$2.2839
Administrative and general expenses	.1775	.3059	.2306	.2240
Total cost	\$2.3283	\$3.2038	\$2.3123	\$2.5079
Masonry Substructure—Quantities—cubic yards	12	348	93	453
Cement	\$1.4100	\$1.6207	\$1.4554	\$1.5813
Stone	1.8567	2.0011	1.8299	1.9621
Sand	.5600	.5955	.5490	.5850
Forms	62.0700	2.3135	3.6754	4.1760
Mixing	.7517	.9705	2.9867	1.3786
Reinforcement		.0857		.0658
Placing	3.9276	2.6277	4.6625	3.0798
Coffer Dams		.4616	.4118	.4392
Maintenance of equipment	.2400	.3002	.2251	.2832
Plant arbitrary	.5340	.5340	.5340	.5340
Division expense	2.4358	.5311	.7738	.6314
Total division cost	\$73.7858	\$12.0416	\$17.1036	\$14.7164
Administrative and general expenses	*.6683	.8987	1.8065	1.0436
Total cost	\$73.1175	\$12.9403	\$18.9101	\$15.7600

*Denotes credit.

CANAL



RECORD

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Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication, or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Las Sabanas Lands Need Not Be Purchased.

An executive order has been signed at Washington exempting from the operation of the order of December 5, 1912, which provides for extinguishing all private titles in the Canal Zone, the lands in the Zone near Panama city known as "Las Sabanas." This land is occupied principally by estates of residents of Panama who have country houses there.

Work at Gorgona Shops.

The policy of decreasing the amount of spare parts carried in stores, and the constant increase in the amount of work being done on the Canal, have made the past year the busiest ever experienced at Gorgona Shops and Foundry. The record of work orders issued and of output of the foundry is given by months in the following statement, and this is in addition to the large amount of repair work done on all classes of equipment:

MONTH.	Work Orders. Number	FOUNDRY OUTPUT.	
		Iron	Brass
		Pounds.	Pounds.
January.....	990	518,621	34,713
February.....	867	615,040	27,637
March.....	1,083	675,366	34,654
April.....	978	561,620	31,891
May.....	932	569,087	47,447
June.....	884	574,506	38,529
July.....	1,195	672,269	19,660
August.....	1,193	563,780	19,639
September.....	1,120	511,445	16,844
October.....	1,115	626,351	25,310
November.....	1,093	610,327	25,905
December.....	1,170	539,002	32,743
Total....	12,730	7,047,414	354,972

In addition to the above and repair work, there were turned out by the steel converter 504,913 pounds of steel castings, 95 heats being required. The largest month in the steel foundry was December when 65,481 pounds of castings were manufactured.

In October the force was the largest in the history of the Mechanical Division, the total being 3,487, of whom 1,153 were "gold" employees or Americans above the common

laborer grade. The total pay roll was \$217,-129.03. Of the total employed by the division, 779 "gold" men were working at Gorgona and 1,259 "silver" men, the balance being distributed among the small shops and engine houses at Gatun, Pedro Miguel, Las Cascadas, Gold Hill, Empire, and Balboa, and the steamshovel repair gangs in Culebra Cut and the Pacific Division. In January, 1913 the number of work orders issued, 1,280, was the largest of record, as also of orders completed, 1,217.

The work in the Gorgona shops fluctuates considerably. During December it fell off to such an extent as to call for a small reduction in the force and it was thought at that time that a larger reduction would be necessary within a few weeks, instead of which, the work during the past two months has increased to such an extent as to make it necessary to work considerable overtime in all departments, and requisitions have been cabled to the Washington Office for new employees in several of the trades.

Cranes for Permanent Shops.

Specifications have been forwarded to the United States for the purchase of three 60-ton, two 25-ton, and two 20-ton traveling cranes for the permanent shops at Balboa.

The 60-ton cranes will be placed in the erecting, machine, and boiler and ship fitters shops. They will have a span from center to center of rails of 56 feet 10 inches, the weight of runway will be 100 pounds per yard, the height of the top rail above the floor, 32 feet. Each will be equipped with four motors and a main and auxiliary hoist, the main hoist to have a maximum working capacity of 120,000 pounds, and the auxiliary of 20,000 pounds. The main hoist motor will have a minimum rating of 50 horsepower, auxiliary hoist motor of 27 horsepower, trolley motor of 10 horsepower, and bridge motor of 50 horsepower.

The 25-ton cranes will be erected in the forge shop and foundry. They will have a span from center to center of rails of 57 feet 6 inches, weight of runway 70 pounds per yard. There will be but one hoist, and this of 50,000 pounds maximum working capacity. The main hoist motors will be of 30 horsepower, trolley of 7½ horsepower, and bridge of 30 horsepower.

The 20-ton cranes will be erected in the boiler and ship fitters shop, and the machine shop. They will have a span from center to center of rails of 56 feet, 10 inches, and the weight of the runway will be 100 pounds per yard. The main hoist will have a maximum working capacity of 40,000 pounds, and be equipped with a 30 horsepower motor. The bridge motor will have a capacity of 25 horsepower, and the trolley motor of 7½ horsepower.

GEOLOGY OF THE ISTHMUS.

Excavation Reveals Connecting Link in Rock Succession.

Excavation for the spillway of Miraflores Lake during the past week uncovered the information that practically completes the chain of evidence showing the relation of the rocks on the Atlantic side of the Isthmus with those on the Pacific side. The Commission geologist, D. F. MacDonald, has made the following preliminary report:

With the information procured at Miraflores Spillway it is now possible to draw a cross section of the Isthmus, showing the different rock formations and the succession in which they were formed. The geological data so far collected within the Canal Zone from all sources, and especially from the Canal and Panama railroad excavations, are more complete than that obtained from any other part of the tropical world, and are of international importance to the sciences. Canal Zone Geology, when the complete report is written, will be the chief section of comparison for all Central American and Antillian geological study. Nowhere else in the tropical world have the rocks yielded such a rich collection of fossils, and the study of the animals that lived in the olden time, together with the study of the different rock beds and the succession in which they were formed, will reveal the history of the joining of the two continents, and the vicissitudes of their long union down to the present time. This history will have more than geological interest because biologists have for many years been trying to solve the problem of the intermigration of animals and plants between the two continents. Their work was of little value until the geological evidence of the age of the joining of the two continents could be found out, as it now practically is, although the final studies yet remain to be completed. A short description of the different rock formations, and the succession in which they were laid down, beginning with the oldest, follows:

ROCK SUCCESSION OF THE ISTHMUS.

Within the Canal Zone are eleven distinct groups or formations of what may broadly be designated as bedded rocks. There are also six broad rock groups of igneous origin. Of the former, the oldest two formations contain no fossils, so their age is unknown. The lower part of the Bohio conglomerate is also of unknown age. The other formations range from lower Oligocene to late Pleistocene. The Miocene is, so far as known, not represented in the rock succession. Correlation across the Isthmus is a difficult matter because of sparsity of outcrops, hence further work may slightly modify the conclusions reached herein.

Number 1. Bas Obispo Formation—The Bas Obispo formation, the oldest Isthmian formation so far known, and probably of pre-Tertiary age, is of volcanic breccia with some

local meta-conglomerate of andesitic composition. It outcrops extensively at Bas Obispo, and near Old Panama, and small outcrops rise above the alluvium near Miraflores and Diablo Ridge.

Number 2. Las Cascadas Agglomerate—The Las Cascadas Agglomerate overlies the basal breccia and outcrops extensively along the Canal between Empire and Las Cascadas. It consists of greenish to gray basic agglomerate, which contains large and small sub-angular fragments in a fine grained ground mass of volcanic clay and tuff. The whole is arranged in massive to roughly bedded unconformable deposits interbedded with which are andesitic flow breccias, some fine grained

grayish, and some coarse grained dark andesitic flows, and a few easily crumbled lava mud flows which show columnar jointing where exposed in the Canal. The whole is cut by large and small basalt dikes.

Number 3. Bohio Conglomerate—The Bohio Conglomerate consists of two members. The lowermost of these is, so far, of indeterminable age, but seems to be considerably younger than the Las Cascadas agglomerate. It consists of gravel, cobbles, and boulders up to several feet in diameter, fairly well bedded but locally massive. Interbedded with the coarser material are sandstone and argillite layers. The uppermost member is of the same general composition but contains some beds of dark

gray foraminiferal marls, probably of early Oligocene age. The cobbles and boulders in both formations are cherts andesites, and diorites in composition, and were derived from the older intrusive masses of igneous rock now found at intervals along the central part of the Isthmian region. The formation is probably nearly one thousand feet thick and it outcrops extensively in the vicinity of Bohio and near Gamboa Bridge and Caimito Junction.

Number 4. The Culebra Formation—The Culebra formation is the oldest series that has, so far, yielded many determinable fossils. Doctors W. H. Dall and T. W. Vaughn, U. S. Geological Survey specialists in the study of Tertiary fossils, regard its fauna as possibly marine Eocene but very likely lower Oligocene. When they have carefully studied the collection, the questions of age will be cleared up. The formation consists of an upper and a lower member. The lower member (a) consists of dark, well-laminated beds of soft shales, marls, and carbonaceous clays, with some pebbly, sandy, and tufaceous layers, and a few thin beds of lignitic shale. It outcrops in Culebra Cut, near Culebra, and near Pedro Miguel. The upper member (b) consists of beds and lenses of sandy limestone to calcareous sandstone, 3 to 10 feet thick, separated by partings of carbonaceous clays and fine-bedded tuffs. This formation seems to be at least five hundred feet thick.

Number 5. Cucuracha Formation—The Cucuracha formation consists of greenish, fine grained clay with some local red beds. It is fairly massive but contains a few beds of lignitic shale, some lenses of gravel, sandy beds, and one extensive flow of gray andesitic lava about 20 feet thick. It outcrops along the Canal near Rio Grande and on both sides of Gold and Contractor's Hills. Its chemical composition is andesitic, it is cut by some basalt dikes and is about four hundred feet thick.

Number 6. Emperador Limestone—The Emperador limestone lies unconformably on several of the older beds. It is a light colored, fairly pure limestone, which contains many corals, some pelecypods and other marine fossils. Its outcrops are somewhat flaggy and occupy comparatively small areas. Near Las Cascadas a section cut by the Canal shows five different beds, some of which are marly sandstone. The lower beds are four to six feet and the upper one about 25 feet thick. The formation outcrops northwest of Empire, south of Las Cascadas, on the relocated line of the Panama railroad near San Pablo, near

CONCRETE WORK IN THE LOCKS AND SPILLWAYS.

Over 97 per cent of the total of 4,446,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on February 21, the amount in place being 4,330,198 cubic yards.

GATUN LOCKS AND SPILLWAY.

Over 95 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on February 21, being 1,960,157 cubic yards, out of a total of 2,043,730. In the spillway of Gatun Dam there had been placed 218,896 cubic yards out of the total of 225,000 cubic yards. A statement of the amount placed each working day of the week ending February 22, and of the total, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.				Large stone.	Total.	SPILLWAY		
	Concrete placed.	Hour worked.	No. of mixer	Concrete laid.			Hours worked.	No. mixers used.	
	Cu. Yds.				Cu. Yds.	Cu. Yds.	Cu. Yds.		
February 17.....	1,346	22.44	4			1,346	95	6.25	1
February 18.....	1,432	23.88	4			1,432	142	6.5	1
February 19.....	1,500	25.00	4			1,500	124	6.00	1
February 20.....	1,216	20.28	4			1,216	128	6.00	1
February 21.....	1,206	20.10	4			1,206	204	6.5	2
February 22 (Holiday).....									
Total.....	6,700	111.70	4			6,700	693	31.25	
Previously reported.....						1,953,457	218,203		
Grand total.....						1,960,157	218,896		

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 911,911 cubic yards, having been placed at the close of work on February 21. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
	<i>Cu. Yds.</i>			<i>Cu. Yds.</i>			<i>Cu. Yds.</i>	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>
February 17.....				184	18.50	3			184
February 18.....				250	25.00	3			250
February 19.....				239	26.00	4			239
February 20.....				210	18.50	3			210
February 21.....				158	14.00	2			158
February 22.....									(Holiday)
Total.....				1,041	102.00	3			1,041
Previously reported.....								4,493	910,870
Grand total.....								4,493	911,911

MIRAFLORES LOCKS AND SPILLWAY.

Over 97 per cent of the concrete for the system of two twin locks at Miraflores was in place on February 21, the total amount on that date being 1,458,121 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 1-cubic yard mixers.			Mixed by hand.	Large stone.	Total.	SPILLWAY. AUXILIARY PLANT.						Total.	
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers				1-cubic yard mixers.			½-cubic yard mixers				
										Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.				Cu. Yds.			Cu. Yds.
February 17.....	1,592	23.92	8	159	17.00	2			1,751	153	6.00	1					153
February 18.....	1,142	32.17	8	90	9.00	1			1,232	180	6.00	1	74	7.50	1		254
February 19.....	1,012	27.50	8	90	9.00	1			1,102	173	7.50	2	85	7.50	1		258
February 20.....	1,400	31.67	6	188	15.00	2			1,588	300	13.50	2	22	2.00	1		322
February 21.....	1,186	29.83	8	146	15.00	2			1,332	208	10.00	2					208
February 22.....									(Holiday)								(Holiday)
Total.....	6,332	145.09	7.6	673	65.00	1.6			7,005	1,014	43.00	1.6	181	17.00	.5		1,195
Prev'l'y reported									3,693	1,451,116							5,600
Grand total...									3,693	1,458,121							6,795

Frijoles, in the swamp southeast of Diablo Bridge, and extensively near Alhajuela. This limestone is referred by Doctors Dall and Vaughn to the lower Oligocene.

Number 7. The Caimito Formation—The Caimito formation consists of four parts, any one of which may be absent. These are (a) a light gray marly argillite, which overlies the Emperador limestone; (b) a yellowish and somewhat spherical weathering argillitic sandstone, which is bluish gray on fresh fracture, (c) a peculiarly calcareous conglomerate with some fragments of much decayed basic rock, which locally gives a bright green stain to small patches of the formation. (d) More yellowish spherical weathering argillitic sandstone. "A" is found mostly overlying the limestone and in immediate contact with it; "b" and "d" may be seen in the section at Bald Hill north of Miraflores, and "b" is thought to be the rock which outcrops in the Chagres River at Barbacoas, near San Pablo. "c" outcrops at Bald Hill, extensively at San Pablo, and at the site of the proposed wireless telegraph station opposite San Pablo. This whole formation has at least four hundred feet of thickness.

Number 8. Panama Formation—The Panama formation, first named by Hill in his bulletin on the geology of Panama, is a light colored well-bedded tuff, somewhat acid in composition and locally containing beds of argillite and sandy marl. It has a few fossils, and outcrops extensively from Miraflores to Panama, and locally in some other places. The formation is at least four hundred feet thick, and overlies the Caimito beds.

Number 9. Gatun Formation—This formation consists of three members: (a) About five hundred feet of marls and argillites containing many marine fossils, and some beds of soft sandstone and conglomerate. It is dark gray in color, except locally where many brown specks indicating fragments of organic material are shown. (b) Mostly fine soft sandstone, about one hundred feet thick, containing a few fossils. (c) Light colored indurated clay beds. The formation is very extensive and constitutes the foundation on which the Gatun Locks are built. The upper part of the formation weathers into red clay, and except where this is cut through by streams it covers the solid rock to a depth of 20 to 25 feet. Large collections of fossils have been made from these beds and from a study of them it is known that the formation was deposited in Oligocene time. The light colored indurated clay beds forming the upper part of the Gatun series seem to correspond to the Panama formation, while the Caimito formation is probably the equivalent of the middle and the lower Gatun beds.

Number 10. Caribbean Limestone—The Caribbean limestone (Gabb's Antillite) is a sandy fragmental limestone, locally a coquina or shell marl. It fringes the Caribbean coast forming low bluffs on many of the headlands. Near the river mouths and the lower ends of the valleys it is generally absent. It outcrops at Toro Point, west of Gatun Dam, and at the mouth of the Chagres River, and is the rock from which Fort San Lorenzo was built. From its fossils it is provisionally referred to the Pliocene. In Costa Rica this limestone fringes the Caribbean shore in many places, and inland from it are argillite beds of the same age.

Number 11. Pleistocene Formations—These consist of (a) Bench gravels up to one hundred

feet above present river levels; (b) Swamp formations filling old channels to depths of 375 feet below present sea levels; (c) River gravels ten feet above present flood plane levels, old sea beaches six to ten feet above present beach levels; (d) shoals, beaches, and present river alluvium.

The old channels mentioned under (b) were cut out by the rivers when the land stood at least 400 feet higher than it now is. It then slowly sank to about eight feet below its present level. Its last motion was upward eight feet, as shown by the geologically very recently raised beaches west of Limon Bay, and at many other points westward into Costa Rica.

Igneous Rocks—The group of igneous rocks are: (1) Quartz diorites and granitic rocks, such as that of Cocovi Island and the granitic float locally found in the Chagres River wash, indicating granitic outcrops somewhere within the river valley. (2) Andesitic rocks as at Point Farfan, opposite Balboa, locally in Culebra Cut, and at other places within the Chagres River basin, as evidenced by the andesite pebbles in the wash of that river. (3) Rhyolitic rocks, as at Ancon Hill, the rock used in the concrete of the Pacific Locks. (4) Basalts, as at Paraiso, the top of Gold Hill near Rio Grande, and locally as dikes in the Culebra Cut, as well as at many other places within the Canal Zone. (5) Mud lava flows and breccias, as shown locally between Empire and Las Cascadas. (6) Meta-sediments and breccias, some of which may have been pushed up cold, as crown masses on top of basalt intrusions. Genetically they are a peculiar and distinct type which so far as known seem not to have been previously described in geology. Gold Hill, Contractor's Hill, Empire Bridge, and some of the Paraiso breccias are of this type.

Building Notes.

Two type No 5 quarters are being taken down at Gorgona and will be erected at Corozal.

At Toro Point, the lower floor of a No 18 bachelor quarters is being changed to accommodate four families. The rear of the dispensary is being converted into quarters for one family.

Water Supply South of Pedro Miguel.

A committee has been appointed to recommend methods of storage, distribution, and treatment of water for the supply south of Pedro Miguel after the Canal is completed. The members are Messrs. H. H. Rousseau, H. O. Cole, Geo. M. Wells, J. T. B. Bowles, and Luis Ernst.

Obituary.

John F. Catto, an employe of the Quartermaster's Department at Empire, was struck and killed by a railroad train near Corozal on the morning of February 22. He was 40 years of age, married, and had been on the Isthmus six years. He is survived by his wife living at Empire.

Missing Men.

Any one having information regarding the whereabouts of John McCaw and John Egan, both of Philadelphia, Pa., and supposed to be on the Isthmus, are requested to communicate with the American Legation, Panama.

Lost—Commissary book No. 59647 between the Ancon cold storage and No. 198 Central Avenue, Panama. A reward is offered if returned to H. H. Hunter, 198 Central Avenue Panama.

CONCRETE REFLECTORS.

Operating Tunnels and Machine Rooms of the Locks.

THE CANAL RECORD of January 8, 1913, published an article on Lock Illumination, outlining the general method of lighting the Canal locks, both exterior and interior. It was mentioned that the tunnel and machine room reflectors were to be made of concrete. Recent experiments made in the evening by the First Division at the Pedro Miguel locks have demonstrated the superiority of the interior lighting arrangement which has been adopted.

Qualitative experiments were conducted to determine:

1. The feasibility of concrete reflectors for both the operating tunnel and the machine room lighting.
2. The general arrangement of the lamp and reflector units to produce proper illumination for the inspection and cleaning of the individual machines.
3. The advantage of tungsten-filament lamps over carbon-filament lamps.
4. The advantage of white-washed walls over concrete walls.
5. General character of the illumination.

When the lock lighting was first taken up, it was considered advisable to cast concrete reflectors into the ceilings of the operating tunnel and the walls of the machine rooms. Concrete reflectors are to be favored upon the Isthmus, as the material is free from a natural deterioration that causes metal reflectors to corrode quickly in a tropical humidity. Later it was suggested that special enamelled-steel fixtures be manufactured by contractors in the United States, and proposals for this material were requested by the General Purchasing Officer under Circular 732. The bids received were quite unsatisfactory, both as to high price and as to the arrangement of the lamp in the reflectors. Particular effort had been made to obtain reflectors of a type to conceal the lamp filament from the eye without obliterating the lighting flux over the areas to be illuminated. The bidders seemed to be unable to obtain this essential feature to any degree of satisfaction. Hence the bids for the reflectors were rejected, and the Commission's engineers worked up new designs of concrete reflectors which would be suited to the requirements of the installation.

The greatest difficulty in the tunnel lighting is occasioned by a low head-room of seven feet. At this height it is somewhat difficult to secure uniform illumination at the floor line. This difficulty has been overcome by placing the lamps on fifteen foot centers along the longitudinal axis of the tunnel. The tunnel is 5 feet 6 inches wide and 7 feet in the clear, and extends nearly the full length of each of the lock walls, connecting together all the machine rooms. The lamps are set in the ceiling on the center line of the tunnel. Alternate lamps are connected upon different circuits and groups of ten or twelve lamps are wired upon the same circuit, permitting an economical control of the lighting whenever operating conditions are such that a mild one-half illumination is sufficient. The wires for the lighting circuits are run in covered chases, which are formed in the concrete at the upper corner of the tunnel. The switches are located in panel boards situated at convenient load-centers along the tunnel.

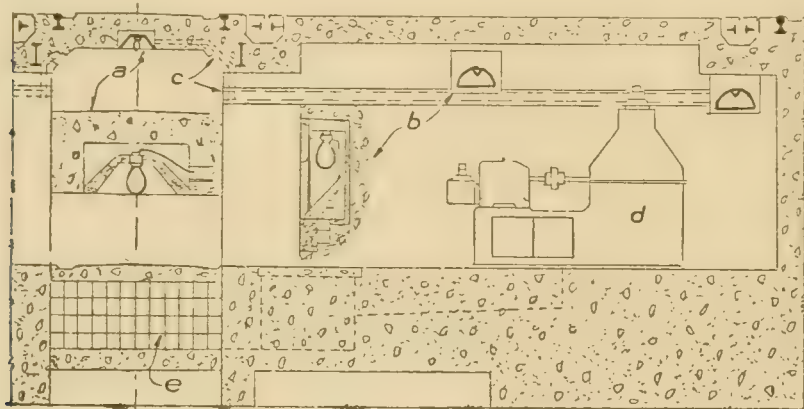
In the experiments, a 200-foot length of

operating tunnel was fitted up with concrete ceiling reflectors. It was found that the illumination produced by one circuit of alternate lamps was sufficient for the ordinary service and that the illumination produced when all lamps were burning was exceptionally uniform. With all lamps burning, there were no objectionable shadows and the reflected light on the ceiling was unusually satisfactory.

The reflector for the ceiling is of comparatively simple design, consisting of inclined surfaces at the four sides to throw the lighting flux in proper directions. The method of supporting the fixtures was given considerable attention in order to devise an easy mounting. The operating tunnel and a detail of the tunnel reflector are shown in the accompanying cut.

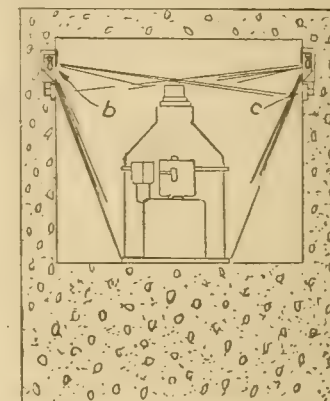
The fort of the designers was directed toward shading the direct ray from the eye without a sacrifice in the illumination of the machinery. The solution is simple and is illustrated in the accompanying cut. A concrete reflector, similar to the ceiling reflector, is grouted into the wall recess. A lamp socket is set in the top of the reflector, and wires are brought to the socket through chases in the walls. In front of the lamp is placed a concrete shade which contains a semi-circular opening at the bottom. The shade is adjusted in a vertical plane to cut off the direct glare of the filament permitting the lighting flux to penetrate through the opening, flooding the machine with an excellent illumination. The lamp recesses are placed so as to light all sides of the machine. The illumination is more than

produced by the tungsten lamps. Forty-watt lamps were used because of an inability to procure sufficient 25-watt lamps, which it is expected will be ultimately installed. It is considered that the tungsten illumination, represented by 100 watts of energy per room, is far superior to the carbon filament illumination, represented by 220 watts of electrical energy per room. The saving is obvious, particularly in view of the present reduced manufacturing cost of the tungsten lamps. In the past some fear has been entertained regarding the life of the tungsten lamps when subjected to possible vibration occasioned by passing locomotives and the operation of the machinery. It is now considered that the stability of the walls and decking will render this vibration of very small magnitude, per-



OPERATING TUNNEL IN LOCK WALLS.

(a) Reflector for Ceiling Lamps. (b) Reflector for Wall Lamps. (c) Chase for Wiring. (d) Cylindrical valve machine. (e) Decks for lighting and power cables.



DETAIL OF TUNNEL REFLECTORS.

(c) Chase for Wiring. (b) Reflector for Wall Lamps.

companying cut. The total number of tunnel lamps is approximately twenty-one hundred

The machine rooms are individual chambers opening into the operating tunnel. Each room houses a special remote-controlled, motor-operated train of gears which drives one of the lock mechanisms, such as the miter gates, the rising stem valves, the chain fenders, the cylindrical valves, etc. The lighting of the individual machine room has presented considerable difficulty, owing to the fact that the lamps could not be placed at the most desirable point in the ceiling on account of large covers and manholes which permit gaining a hurried access through the decking to the equipment by means of cranes operated upon the tracks of the lock coping. It was necessary to depend upon side-wall illumination, approximately 5,000 lamp recesses being cast in the concrete walls at about the level of the eye. To install a lamp in this recess without some shading feature was to invite the disadvantage of vision occasioned by glancing into a direct glare of the lamp filament. Whenever the eye is forced to gaze upon a bright source of light, the pupil contracts to a minimum aperture, preventing the retina from transmitting a distinct picture of the less luminous surfaces. Consequently, every ef-

ample for ordinary inspection and cleaning, and is sufficient for the majority of repair work that does not require the concentrated light of a portable extension.

In the experiments, two cylindrical valve rooms, a rising stem valve room, and an auxiliary valve room were fitted with the shaded concrete reflectors. In every case the results were excellent. The rising stem valve in particular was eminently satisfactory. This chamber is quite deep, extending as a pit, 22 feet 3 inches below the floor of the operating tunnel, requiring three levels of wall lamps. The illumination in the pit was excellent, as was also the illumination of the motor and upper machine parts which are unfavorably situated respecting the source of lighting.

An experiment was conducted to demonstrate the superiority of the tungsten-filament lamps over carbon-filament lamps. Two adjacent cylindrical valve rooms in the center wall were each fitted up with four concrete reflectors. In one room sixteen-candle-power-carbon-filament lamps were used and in the other forty-watt tungsten lamps were used. The illumination with the tungsten lamps was vastly superior to that of the carbon-filament, the yellow light emitted by the carbon lamps being very inferior to the white light

mitting the use of a drawn metallic filament lamp without undue breakage.

Excellent results were obtained by whitewashing the walls of a section of the tunnel and of the machine rooms where the wall reflectors were installed. The lighting flux is diffused much better and sharp shadows are practically eliminated. The inside of all reflectors were whitewashed, which, if advisable, may later be changed to a more durable white enamel. Portions of the tunnel which were not whitewashed looked dingy and the illumination was not nearly as uniform. It is apparent that, as an operating measure, the whitewashing of walls in the tunnels and machine rooms will prove of extreme advantage from every point of view—sanitation, cleanliness, and illumination.

The results of the lighting experiments demonstrated that the permanent lighting of the tunnels and machine rooms of the locks would be proper, and that the side wall lighting would not prove to be the eye-sore that might be imagined. By actually making trial reflectors of varying shapes certain objectionable features of the original design were eliminated, and the construction of the details of support were given consideration which was not apparent on the original sketches.

CLASSIFIED EXPENDITURES—ISTHMIAN CANAL COMMISSION.

PERIODS.	Department of Civil Administration.	Department of Law.	Department of Sanitation.	Department of Construction and Engineering.	General Items.	Fortifications.	Total.
Total to June 30, 1909.	3,427,090.29		9,673,539.28	69,622,561.42	78,022,606.10		169,745,797.09
Total—Fiscal Year, 1910.	709,351.37		1,803,040.95	26,300,167.05	2,863,088.83		31,675,648.20
Total—Fiscal Year, 1911.	755,079.44		1,717,792.62	27,477,776.19	3,097,959.72		33,048,607.97
Total—Fiscal Year, 1912.	820,828.57	24,729.16	1,620,391.12	28,897,738.10	2,819,926.53	1,212,881.66	35,396,065.14
July, 1912.	63,913.12	1,448.53	123,803.64	2,649,246.61	200,970.85	104,126.92	3,143,509.37
August, 1912.	62,182.51	1,468.26	123,154.48	2,539,680.83	98,054.61	111,402.55	2,739,834.02
September, 1912.	59,010.01	1,207.82	120,385.70	2,285,979.89	77,003.53	127,168.25	2,670,946.20
October, 1912.	64,883.37	2,033.75	137,574.61	2,473,280.76	83,523.30	129,736.37	2,890,532.16
November, 1912.	62,200.12	1,892.14	119,031.66	2,420,085.77	75,779.01	300,016.43	2,979,005.03
December, 1912.	58,987.96	1,462.18	115,819.26	2,871,977.03	120,946.61	118,152.57	3,287,345.61
Grand total.	6,082,787.76	34,241.84	15,554,533.32	1,753,849,655.65	87,263,749.57	2,103,484.65	278,577,290.70

*Denotes credit.

CANAL WORK IN JANUARY.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., February 15, 1913.

The Honorable the Secretary of War,
Washington, D. C.

Sir: I have the honor to submit the following report of operations on the Isthmus for the month of January, 1913:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the construction divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	2d. Div.	5th Div.	6th Div.	Total.
Work excavation, dry	Cubic yards..	46,773	1,135,580	54,114	435,597		1,672,063
Work excavation, wet	Cubic yards..	508,338		216,540		215,025	939,904
Total work excavation	Cubic yards..	555,111	1,135,580	270,654	435,597	215,025	2,611,067
Plant excavation, dry	Cubic yards..			53			53
Plant excavation, wet	Cubic yards..						
Total plant excavation	Cubic yards..			53			53
Total Canal excavation	Cubic yards..	555,111	1,135,580	270,707	435,597	215,025	2,612,020
Material placed in dams	Cubic yards..	149,609			72,393		222,002
Concrete placed at locks, dams and spillways	Cubic yards..	32,271			59,091		91,362
Explosives used	Tons (Gross)	22.91	177.	7.43	96.54	20	323.98
Rock drilled	Feet	22,038	389,634	13,856	126,182	12,175	563,885
Tracks removed	Miles		6.98				6.94
New tracks laid	Miles	4	17.36		2.50		23.86
Rock crushed	Cubic yards..				70,188		70,188
Cement used	Barrels	39,453	27		61,957	18	101,455
New roads built	Miles				1,573		1,573
Water mains laid	Feet		2.5				1.78
Sewers laid	Feet						
Open drains and ditches dug	Feet	9,184	30,708		177		40,069
Average daily force		4,783	6,619	812	5,885	1,298	19,398
Average rainfall	Inches	5.67	2.50	.78	1.10	.78	2.82

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the Division Engineer of the Atlantic Division, Resident Engineer Cole and the Erection subdivision of this office. The inspection of this work is being cared for by the masonry and lock structures subdivision. This subdivision is also charged with general inspection of masonry work of all the locks.

INSPECTION OF INSTALLATION OF RISING STEM GATE VALVES, ERECTION OF SPILLWAY GATES AND CAISSONS, AND ASSEMBLY OF HYDRO-ELECTRIC DRAFT TUBES AT GATUN.

The work of erection of caisson at Gatun was continued and the work completed on January 25. Work was resumed on the erection of the eight spillway gates at Miraflores and at the close of the month was about 25 per cent completed.

There was no work done on the caisson for Miraflores.

Work was continued on the preparation of rising stem gate valve machinery chambers at Gatun, Pedro Miguel, and Miraflores, and satisfactory progress was made.

Work was continued on assembling and riveting of draft tubes for the hydroelectric station at Gatun.

LOCK GATES AND PROTECTIVE DEVICES.

Up to January 20, a total of 61,897 tons of steel plates and shapes had been accepted at the rolling mills. Shipments of riveted structural steel from the Rankin shops totaled 51,374 tons, or about 99 per cent of the con-

tract weight required for the 92 leaves to be erected. Of this total, 1,379 tons were shipped during the month. There were also 286 tons of spare part shipped during January. So far as erection, reaming, and riveting are concerned, the contractors progressed satisfactorily. The total tonnage of lock gate material erected on February 1 in all locks, without regard to its being fully reamed or riveted, was 39,096 tons, or about 68 per cent of the total required. Of this 3,066 tons, or about 6 per cent were erected during the month. The total number of field rivets driven was 2,831,600; there remain about 2,700,000 to be driven. The status of the work in the several locks may be summarized as follows:

livery up to the promised schedule. The rate of installing the machines keeps pace with the receipt of the various parts. The following tabulations are given as a summary of the work:

RISING STEM GATE VALVES.

	Gatun—56		Pedro Miguel—24	
	*Assembled	Placed.	Assembled.	Placed.
During mo.	2	2	0	7
To date....	37	40	22	22
Miraflores—36				
			Assembled.	Placed.
During month.....			1	
To date.....			1	

*Valves assembled with seal after being placed.

FIXED IRONS AND TRACKS FOR RISING STEM GATE AND GUARD VALVES.

	Gatun—124		Pedro Miguel—60	
	Milled or Ground.		Milled or Ground.	
During mo.	0		8	
To date....	120		38	
Miraflores—84				
			Milled or Ground.	
During month.....			8	
To date.....			10	

GUARD VALVES.

	Gatun—6		Pedro Miguel—6	
	Assembled.	Placed.	Assembled.	Placed.
During mo.				
To date....		6		
Miraflores—6.				
			Assembled.	Placed.
During month.....				
To date.....				

RISING STEM GATE VALVE MACHINES.

	Gatun—56.		
	Received.	Partially installed.	Installed.
During month.....	6	8	9*
To date.....	52	17	33
	Pedro Miguel—24		
	Received.	Partially installed.	Installed.
During month.....	0	0	5*
To date.....	24	2	20
	Miraflores—36		
	Received.	Partially installed.	Installed.
During month.....	1	4	
To date.....	18	4*	

*Machines completed except bottom seals machined—10 at Pedro Miguel, and 16 at Gatun.

RACK TRACK.
(In one-foot units.)

	Gatun—21,945 feet.			
	Dist.	Track laid.	Frozen.	Completed.
During month.	903	903	0	2,799
To date.....	18,679	18,679	16,030	15,281
	Pedro Miguel—13,213 feet.			
	Dist.	Track laid.	Frozen.	Completed.
During month.	673	494	2,113	1,175
To date.....	10,241	9,812	8,804	7,476
	Miraflores—19,031			
	Dist.	Track laid.	Frozen.	Completed.
During month.	1,065	1,269	112	
To date.....	2,167	1,317	170	18

Gatun—Work is in progress on all of the leaves, 40 in number. Erection 78 per cent completed, Reaming 75 per cent completed, Riveting 66 per cent completed, and Finishing 10 per cent completed.

Pedro Miguel—Work is in progress on the entire 24 leaves. Erection 82 per cent completed, Reaming 86 per cent completed, Riveting 70 per cent completed.

Miraflores—Work is in progress on 16 of the 28 leaves. Erection 43 per cent completed, Reaming 25 per cent completed, Riveting 15 per cent completed.

LOCK GATE RECESS COVERS.

All recess covers at Gatun have been erected and grouted and the portable part of ten covers fitted in place. At Pedro Miguel all the covers have been erected and grouted and the portable part of four covers fitted in place. At Miraflores 20 of the 24 covers have been erected and riveted in place, but only one has been grouted.

CHAIN FENDERS.

Work in the field consisted of completing the piping in chain fenders 812 and 813 in the upper approach at Gatun Locks. The tank and pump were fully installed. In pit 812 the concrete was placed in the floor; in pit 813 the floor concreting is practically completed.

INSPECTION AND ERECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection of the operating machinery and electrical equipment. The contractors are generally behind hand in their deliveries, but the progress is being made with a view to bringing the rates of de-

CYLINDRICAL VALVE MACHINES.

Gatun—60.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	60	5	55*

Pedro Miguel—20.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	20		20

Miraflores—40.			
	Received.	Partially installed.	Installed.
During month.....	4	20	20
To date.....	40	20	20

*18 without motors.

MITER GATE MOVING MACHINES.

Gatun—40.			
	Received.	Partially installed.	Installed.
During month.....	1	1	1
To date.....	13	23	5

Pedro Miguel—24.			
	Received.	Partially installed.	Installed.
During month.....		8	
To date.....	11	23	2

Miraflores—28			
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

AUXILIARY CULVERT VALVE MACHINES.

Gatun—4.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	4		4

Pedro Miguel—4.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	4	4	

Miraflores—4.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	4		

MITER FORCING MACHINES.

Gatun—20.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	1		1

Pedro Miguel—12.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

Miraflores—14			
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

MITER GATE RECESS COVERS.

Gatun—36.			
	Placed.	Frozen.	Completed.
During month.....			1
To date.....	36	26	18

Pedro Miguel—20.

	Placed.	Frozen.	Completed.
During month.....		4	
To date.....	20	20	

Miraflores—24.

	Placed.	Frozen.	Completed.
During month.....	4		
To date.....	20		

ELECTRICAL WORK—ATLANTIC LOCKS.

Conductor rails, insulators, brackets and cover plates were installed on 1,320 feet of straight and 500 feet of curved track, making a total to date of 19,046 feet. Of this 9,036 feet have been equipped with steel conductor bar and 10,010 with copper conductor bar. Progress has been made in pulling cable into the conduit system, a total of 270,602 feet having been pulled at the end of the month, practically completing this work. Nearly all of the cable pulled has been protected with tile in the manholes. All ducts installed have now been rodded, cleaned and wired, 29,925 feet having been completed during the month of January. Thirty-two control panels for cylindrical valve machines and 11 control panels for miter gate moving machines have been assembled ready for conduit and cable work. Eight of the bases for rising stem valve machines are ready for installation of panels. Eighteen cylindrical valve machines and three auxiliary culvert valve machines were tested and operated satisfactorily, making a total of 36 cylindrical valve machines tested and operated to date. There were 13 rising stem valve machines tested and operated in accordance with specifications, making a total of 21.

ELECTRICAL WORK—PACIFIC LOCKS.

Pedro Miguel—Conductor rails, insulators, brackets, and copper plates were installed on 2,736 feet of track, making a total of 8,430 feet. Of this amount, 3,469 feet have been equipped with steel and 4,961 feet with copper conductor bar. A total of 94,466 duct feet of vitrified tile and 13,162 duct feet of fibre conduit has been prepared to receive cable. There were 2,436 feet of 3-conductor No. 0000 cable pulled during the month, making a total of 15,336 feet. The total amount of 3-conductor No. 00 cable pulled—3,360 feet—was not increased during the month. Twenty control panels for cylindrical valve machines have been installed ready for conduit and cable. A total of 11 control boxes for miter gate hand railings has been installed, seven being installed during January. Six of the 200 K. V. A. power transformers were placed.

Miraflores—Steel conductor bar, insulator brackets and plates were installed on 1,920 feet of track. There were 44,333 feet of duct rodded, cleaned and wired preparatory to pulling cable. Preliminary test was made on four rising stem gate valve machines.

The 20 cylindrical valve machines at Pedro Miguel were tested and operated satisfactorily.

EMERGENCY DAMS.

Inspection was in progress at five localities in the United States and 194 tons of material were accepted. At the end of the month 7,728 tons had been fabricated and accepted. About 1,606 tons were delivered on the Isthmus during the month and approximately 927 tons were erected. On January 31 a total of

7,212 tons had been delivered and 3,613 tons erected. Approximately 50 per cent of the material required for all emergency dams has been received, of which about 27 per cent has been erected. Work was in progress on the east and west dams at Gatun and the west dam at Pedro Miguel.

AIDS TO NAVIGATION.

Ten range towers of the Atlantic and Pacific type, including foundations, were completed, except that two steel lantern doors must be hung, stair railings erected, towers painted and permanent lights installed. Work on the outside walls and newel post of one tower is well under way. Nine towers of the Gatun Lake section type, with foundations, were completed, except that doors must be hung, steel lanterns erected, lantern glass set in place, and permanent lights installed. Seven of these towers are still to be painted. One foundation for Atlantic and Pacific type was completed. The electric light line from Aguadulce pumping station to range No. 1-2 and beacons No. 5 and 7, Pacific end, was completed, except that electric fittings must be placed and connections made. Work was in progress on range towers Nos. 2, 11, and 15, Gatun Lake section, wiring electric light line, Pacific end, and making the necessary surveys and reconnoissances.

Second Division—Office of the Chief Engineer.

BALBOA TERMINALS:

The following work was accomplished during the month:

EXCAVATION.		Cu. Yds.
Stream shovel.....		
Sosa Hill.....		18,073
Shop foundations.....		2,610
Dry Dock.....		29,509
Orange Peel.....		
Quay wall.....		2,300
Hand.....		
Shop foundations.....		1,388
Quay wall.....		234
Dike (pier No. 1).....		53
Total.....		54,167

The foregoing was distributed as follows:

	Cu. Yds.
Preparing site.....	18,073
Dry Dock.....	29,509
Foundations for shops.....	3,998
Quay wall.....	2,534
Dike (pier No. 1).....	53
Total.....	54,167

FILLING AND EMBANKMENT.

	Cu. Yds.
Preparing site.....	34,575
Sand line.....	6,274
Dikes.....	7,871
Fifth Division (estimated).....	5,600
Total.....	54,320

CONCRETE PLACED.

	Cu. Yds.
Caissons.....	1,193
Shop foundations.....	442
Total.....	1,635

GENERAL REMARKS.

Excavation by steam shovel was continued in Sosa Hill and in the Dry Dock. The general service and sand line track, previously constructed as far Diablo, was extended into Corozal, thus permitting the removal of the tracks in the vicinity of the proposed shop buildings. Other extensions and rearrangements of tracks were made in accordance with the general construction scheme decided upon. The driving of piles, sheeting, excavating and concrete work for the foundations of the proposed shop buildings were proceeded with, No. 6 being completed. The amount of caisson sunk for the substructure of the proposed quay wall northeast of the present concrete dock was an increase over that of any

previous month, and tracks were constructed for the commencement of work on pier No. 1. The caisson manufacturing plant was enlarged and facilities provided for the manufacture of approximately 100 lineal feet of caisson daily.

METEOROLOGY AND HYDROGRAPHY.

The usual observations and measurements were continued during the month.

Fifth Division—Office of the Chief Engineer.

DISTRICT NO. 1, LOCKS, DAMS, AND DRY EXCAVATION

Excavation—The total excavation during the month amounted to 436,002 cubic yards, of which 318,366 cubic yards were classified as rock and 117,636 cubic yards as earth.

Filling and Embankment—During the month 20,198 cubic yards of dry filling were added to the prism of the Pedro Miguel west dam, increasing the total amount of fill in place at the end of the month to 690,878 cubic yards. The backfill at Pedro Miguel was increased by 26,471 cubic yards, the total quantity in place at the close of the month being 801,418 cubic yards.

At Miraflores, the dry filling in the toes of the west dam was increased by 52,195 cubic yards, making the total quantities of dry and hydraulic filling in place at the end of the month 1,540,614 cubic yards and 661,048 cubic yards, respectively. The backfill at Miraflores was increased by 112,293 cubic yards, the total amount in place at the close of the month being 1,178,596 cubic yards.

Pedro Miguel Locks—Excavation was continued in the Canal prism south of the locks and in the foundation of the lower guide wall. Backfilling of the two side walls and north wing walls was continued. The concrete work consisted of the construction of the south guide wall extension, emergency dam quadrants and installation of electric cable ducts. The total amount of concrete and large stone laid at Pedro Miguel was 6,446 cubic yards placed as follows: 613 cubic yards in the east wall, 327 cubic yards in the west wall, 28 cubic yards in the floors, 5,198 cubic yards in the south center guide wall, 278 cubic yards in the northeast core wall, 1 cubic yard around ducts in area A and one cubic yard around ducts in area B.

OPERATION OF THE AUXILIARY CONSTRUCTION PLANT—OF PEDRO MIGUEL.

Length of working day (hours).....	8.00
Average number of hours per day worked laying concrete and large stone (actual working time).....	6.75
Average number of mixers per day.....	4.19
Average hourly output per mixer, actual working time (cubic yards).....	8.80
Large rock laid (cubic yards).....	
Concrete laid (cubic yards).....	6,471.00

Total concrete laid (cubic yards)..... *6,741.00

*Includes 25 cubic yards laid for the American Bridge Company.

Miraflores Locks—Dry excavation was continued in the Canal prism south of the locks, the material being used for backfilling the locks, filling on the west dam and for swamp reclamation. Excavation of the spillway was continued. Concrete work consisted of the construction of north approach and wing walls, spillway, extension of west wall, south guide wall, operating tunnels, sills and floor of lower west chamber, and northeast core wall. Fixed irons aggregating 981,702 pounds were placed in the masonry. The total amount of concrete and large stone laid at Miraflores was 54,221 cubic yards, placed as follows: 1,763 cubic yards in the northeast wing wall, 1,156 cubic yards in the north center

guide wall, 1,535 cubic yards in the east wall, 2,628 cubic yards in the northeast core wall, 5,430 cubic yards in the center wall, 13,068 cubic yards in the west wall, 19,300 cubic yards in the south approach wall, 8,198 cubic yards in the floors, 40 cubic yards around ducts in area A, 8 cubic yards around ducts in area B, and 18 cubic yards around ducts in area C.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS—MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours).....	8.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time).....	4.87	7.85
Average number of mixers per day.....	7.92	4.35
Average hourly output per mixer, actual working time (cubic yards).....	43.89	11.52
Average amount of concrete and large stone laid per hour per berm or chamber crane, actual working time (cubic yards).....	58.57	
Large rock laid (cubic yards).....		
Concrete laid (cubic yards).....	37,356.00	16,920.00
Total concrete laid (cu. yds.).....	37,356.00	16,920.00

Above totals include 50 cubic yards placed for the McClintic-Marshall Company.

Auxiliary plant consisted of two 1-cubic yard mixers (daily average 1.87), four 3-cubic yard mixers (daily average 2.54), and four locomotive cranes and derricks (daily average 2.23). Output of these mixers was either placed by locomotive cranes and derricks or discharged directly into forms. Permanent plant consisted of four berm and four chamber cranes.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

Reservoirs, water mains, sewers and oil pipe lines were maintained and extended as required to facilitate construction work, and preliminary work was begun on the new town-site at Balboa.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT

Length of working day (hours).....	12.00
Average number of hours per day, actual working time.....	9.26
Average number of cubic yards crushed per hour per working day.....	224.96
Average number of cubic yards crushed per working hour.....	291.61
Total output for the month (cubic yards).....	70,188.00

Sixth Division—Office of Chief Engineer.

The following is a statement of the output of the six dredges which were in operation during the month:

DREDGE.	Type.	WORK.			PLANT.		Total.	Remarks.
		Earth Cu. Yds.	Clay Cu. Yds.	Rock Cu. Yds.	Earth Cu. Yds.	Rock Cu. Yds.		
Badger.....	Ladder.....	69,454	4,347				73,791	Place measurement
Cardenas.....	Dipper.....		11,664	10,344			22,008	Place measurement
Corozal.....	Ladder.....		27,451	67,209			94,660	Place measurement
Culebra.....	Suction.....							Undergoing repairs
Marmot.....	Ladder.....		7,994	5,789			13,783	Place measurement
Mole.....	Ladder.....	650	1,200	8,933			10,783	Scow measurement
No. 85.....	Hydraulic.....				216,540		216,540	Place measurement
Total.....		70,104	52,646	92,275	216,540		4,1565	

*Accomplished by 6th division for the 2nd division.

CHAME SAND EXCAVATION.

Approximately 37,000 cubic yards of sand were excavated at Punta Chame and delivered to the Balboa sand bins.

BALBOA SHOPS.

The manufacturing and repair work in the shops and shipways was satisfactorily performed during the month.

Atlantic Division.

GATUN LOCKS.

Excavation—There were 46,523 cubic yards

excavated during the month, all removed in preparing foundations for the lock walls.

Backfill—Backfilling behind the side walls was continued, the quantity placed during the month aggregating 33,411 cubic yards. The total amount placed to February 1 was 1,974,998 cubic yards.

On that date the work was 95.2 per cent completed.

Receiving and Issuing Material—The issues of rock for the month amounted to 26,582 cubic yards. There were 13,537 cubic yards of sand issued. Cement receipts totaled 9,376 barrels and the issues amounted to 34,541 barrels.

Mixing and Placing Plants—Plant No. 1 and portable mixers were kept in satisfactory operation during the month.

Concrete Work—A total of 28,790 cubic yards of concrete was laid, distributed as follows:

Upper lock 19½ cubic yards, Middle lock 14½ cubic yards, Lower lock 28,756 cubic yards. On January 31 the concrete work was 94.51 per cent completed.

At four o'clock on the morning of January 25 the east bank of the excavation, north of the east side wall, gave way, carrying with it the main line and two construction tracks. The moving material extended north and south, covering the site of the north approach wall with from 5 to 18 feet of mud. In its progress two skid pile drivers were overturned and destroyed, or at least so badly wrecked that it is not deemed expedient to repair them. A Bucyrus pile driver was secured from the Panama railroad, which will be used in driving the remaining piling. A large amount of piling and miscellaneous material was carried down and some of it covered up by the mud. Most of the piling was recovered. The mud over the site of the approach wall is being removed by sluicing and by locomotive crane. It is probable that the completion of the north approach wall will be delayed about two months on account of this slide.

OPERATION OF CONCRETE CONSTRUCTION PLANT.

Length of working day (hours).....	9.00
Average number of hours per day worked, per strand of cableway, laying concrete, actual working time.....	4.775
Average number of mixers per day.....	3½
Average hourly output per mixer, actual working time (cubic yards).....	60.
Average amount of concrete laid per hour, per strand of cableway.....	29.49
Concrete laid (cu. yds.) cableways.....	29,176
Concrete laid (cu. yds.) derricks.....	
Concrete laid (cu. yds.) portable mixers.....	101
Concrete laid (cu. yds) hand mixed.....	19

Total amount of concrete laid (cu. yds.)... 29,296.00

GATUN DAM.

Construction during the month increased the total fill, as determined by cross section

of the borrow pit from which the material was taken, by 149,609 cubic yards, making the total amount in place 21,217,689 cubic yards. On February 1 the dam was 96.4 per cent completed.

Hydraulic Fill—There was no increase made in the hydraulic fill, the total in place remaining at 10,124,082 cubic yards.

Dry Fill—There were added to the dry fill 149,609 cubic yards of material received from steam shovels; this was placed on the north and south toes of the dam, east and west of the spillway, making the total dry fill in place 11,093,607 cubic yards.

Hydroelectric Plant—During the month 250 cubic yards of rock were removed by hand in the preparation of foundations, making a total excavation of 97,961 cubic yards. There were 163 cubic yards of concrete placed, making a total of 812 cubic yards.

GATUN SPILLWAY.

Backfill—No backfilling behind the spillway walls was done, the total on January 31 remaining at 16,495 cubic yards.

Concrete—A total of 4,186 cubic yards of concrete was laid during the month. Concrete work for the spillway is 95.9 per cent completed.

Excavation—There was no material excavated during the month, the total remaining at 1,591,261 cubic yards.

HARBOR AND CHANNEL SECTION.

Dredging—Ocean to Mindi—Seven dredges removed 467,720 cubic yards of earth and 40,618 cubic yards of rock from the Canal prism. In addition, the dredge *Mindi* removed 16,012 cubic yards of earth from the slip between docks 16 and 17, Panama Railroad Company's Cristobal terminal docks, while the dredge *Caribbean* removed 302,029 cubic yards of earth from the Cristobal approach channel. On January 31 forty feet of water could be carried from zero to zero plus 2,100 feet, 35 feet to mile post 4 plus 3,500 feet, 30 feet to mile post 5 plus 2,200 feet, 20 feet to mile post 6 plus 2,335 feet, ten feet to mile post 6 plus 2,800 feet. The *Terrier* drilled 2,970 feet, used 25,300 pounds of dynamite and shot 4,378 cubic yards of earth and 27,579 cubic yards of rock to minus 45 feet, mean sea level.

West Breakwater—Colon—There were 18,383 cubic yards of Porto Bello rock unloaded, of which 11,363 cubic yards were handled by cranes and 7,020 cubic yards by the derrick barges, making the total amount unloaded to February 1st 152,973 cubic yards.

MUNICIPAL ENGINEERING.

New Colon Waterworks—Excavation for the clear water basin was completed and about 700 cubic yards of material removed. Five hundred piles were driven to bed rock in connection with foundations for the filter building, which completed this work. The reinforced concrete slab covering those piles and forming the floor of the clear water basin was laid and the forms for the side walls commenced. The creosoted poles carrying the foundation of the pump station walls were driven and the excavation for the concrete footings was completed.

The reservoirs, water mains, sewers, roads and oil pipe lines were maintained and extended as required to facilitate construction work.

Central Division.

During the month the total amount of material excavated was 1,135,580 cubic yards,

of which 186,131 cubic yards were classified as earth and 949,449 cubic yards as rock. The entire amount was removed by steam shovels. Of this total, 1,117,220 cubic yards were primary excavation in the Canal prism and 18,360 cubic yards were from the Obispo Diversion.

The daily average number of steam shovels at work was 35.44 and the total number of shovel days was 921½, as compared with 34.28 shovels at work and 857 shovel days in December. For comparison with the work done by steam shovels during the corresponding month of the previous year, the following table is presented:

Period	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W'kg days.	Av. yards per shovel per day.
		Rock.	Earth.			
1912:						
Jan...	Cu. Yds. 1,421,133	Cu. Yds. 1,204,657	Cu. Yds. 216,476	41.92	26	1,303.79
1913:						
Jan...	1,135,580	949,449	186,131	35.44	26	1,232.00

Rainfall at Empire: 1912, .01 ins.; 1913, 1.67 ins.

The above table shows the average output per shovel to be 5.51 per cent less in January 1913 than in the corresponding month of 1912.

The total amount of material excavated from the Culebra Section in January 1913—1,135,580 cubic yards—is the lowest record in that section for the month of January since 1907; in January of that year only 566,750 cubic yards were removed.

The total estimated amount of material (dry excavation) to be removed in the Central Division, according to revised estimate of July 1, 1912, was 106,116,221 cubic yards and up to February 1, 1913, 101,994,239 cubic yards had been removed, leaving 4,121,982 cubic yards to be removed in order to complete all dry excavation. From these figures it will be seen that 96.12 per cent of all excavation in this division was completed on January 31. At the close of the month's operations the status of the excavation in the two sections which compose this division was as follows:

	CULEBRA CUT.	Cu. Yds.
Completed...		89,609,584
To be completed.....		4,121,982
	CHAGRES SECTION.	Cu. Yds.
Completed.....		12,384,655

Thus it will be seen that the Culebra Cut is 95.60 per cent completed. The Chagres section is entirely completed, so far as dry excavation is concerned, but it is estimated that about 300,000 cubic yards of wet excavation will have to be made in this section.

The work of excavation which this division had been doing for the Fifth Division on the site of the Miraflores spillway was completed. In all, the Central Division excavated 58,171 cubic yards at this point.

There were furnished during the month to the Panama Railroad Company, for the Cristobal mole, 37,856 cubic yards, the total amount furnished to January 31 for this purpose being 189,356 cubic yards.

There were 56,334 cubic yards of material dumped on Naos Island trestle, making a total of 1,177,567 cubic yards. The construction of a double track trestle over that portion of Naos Island trestle already single tracked was authorized in December, 1912, and this work was commenced on January 10th, 1913 lineal feet of trestle being driven to the end of the month.

There was employed a daily average of

6,054 laborers, while the average number of gold men working was 565.

Quartermaster's Department.

Labor—The force report shows that the actual working force of the Commission and Panama Railroad Company averaged more than 37,000 men daily. If to this be added the forces of the McClintic-Marshall Construction Company and the other contractors engaged on the work, the total will be found to exceed 43,000 men—the largest force ever employed on the Canal. The shortage of unskilled labor continued, despite the receipt of a small shipment of laborers from Barbados. Upon arrival of the 428 additional men who left Barbados on January 24, it is believed the shortage will be taken care of to a large extent.

Buildings—Practically the only work done during the month was the removal of barracks to Corozal and Gamboa.

Quarters—The congestion of gold bachelor quarters at Gatun and in the districts on the Pacific end continued.

Material and supplies—The value of material received was \$1,851,567.91. In point of value, considerably more than half of this material was consigned to the First Division of the Chief Engineer's Office. The material came forward in 34 steamers, the total weight of cargo, exclusive of lumber, piling and ties, being 37,515 tons.

Subsistence Department.

The Hotel Tivoli showed a net profit of \$13,587.71. The operation of the line hotels, European laborers' messes, colored laborers' kitchens, restaurants, penitentiary, tugs and dredges returned a net profit of \$3,033.76. The total net profit on subsistence operations during the month was \$16,621.47.

Department of Civil Administration.

COURTS.

During the month 73 civil and 31 criminal cases were disposed of in the Circuit Courts, and 51 civil and 600 criminal cases in the District Courts.

POSTS, CUSTOMS, AND REVENUES.

Money order sales amounted to \$422,076.28, and the fees to \$1,982.68. Receipts from stamp and card sales and newspaper postage aggregated \$9,274.33. The total collection of revenues made was \$16,829.77 and the collections on account of court fines, costs, and fees \$3,358.19. A total of \$132,568 was deposited in postal savings accounts and a total of \$94,654 was withdrawn. At the port of Ancon 21 vessels entered and 23 cleared, and at the port of Cristobal 28 entered and 23 cleared.

POLICE AND PRISONS.

The total number of persons arrested was 628, of whom 545 were men and 83 women. Twenty-two nations or forty-two separate states and dependencies were represented. There were ten convicts committed to the penitentiary and five were discharged, leaving 124 convicts in confinement at the close of the month. The cost of guarding and subsisting these convicts was \$2,366.11 and the value of the work performed by them on the roads of the Canal Zone was \$2,210.25.

FIRE PROTECTION.

There were 12 fires reported in the Canal Zone. The damage to Commission property was \$177.50 and to private property \$150.

PUBLIC WORKS.

In the city of Panama the daily average consumption of water was 1,891,580 gallons

and in Colon 1,342,007 gallons. The usual inspection and maintenance work in this division was performed.

SCHOOLS.

The net enrollment in the white schools was 1,301, the average number of pupils belonging was 1,122.5, and the average daily attendance 1,050.3. In the colored schools the net enrollment was 1,364, the average number of pupils belonging was 986.1, and the average daily attendance 786.7. At the close of the month there were employed in the white schools 47 teachers and in the colored schools 31 teachers, the total being the same as employed at the close of the preceding month.

Department of Sanitation.

The total number of deaths from all causes among employes was 51, divided as follows: From disease 32 and from violence 19, giving an annual average per thousand of 7.37 and 4.37, respectively. The annual death rate per thousand among employes for the month of January, 1912, was 8.10.

The annual death rate per thousand in the Canal Zone and in the cities of Colon and Panama, including both employes and non-employes, was 23.24. This rate is based upon a population in the Canal Zone of 62,810 according to the census of February, 1912, and populations in Colon and Panama respectively, of 20,232 and 47,172, as estimated by the Department of Sanitation. The annual average death rate per thousand among the same classes of population for the month of January, 1912, was 17.67.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was: Whites 3.82, blacks 8.49, giving a general average for disease of 7.37. For the same month during 1911 the annual average death rate per thousand from disease among whites was 1.89, blacks 6.23, giving a general average of 5.07; and for the same month during 1912, whites 7.57, blacks 3.98, giving a general average of 4.86.

Among employes, deaths from the principal diseases were as follows: Haemoglobinuric fever 2, labor pneumonia 5, malaria fever, E. A., 2, organic disease of the heart 2, tuberculosis 8, typhoid fever 1; leaving 12 deaths from all other diseases and 19 deaths from external violence.

No case of yellow fever, small pox, or plague originated on or was brought to the Isthmus during the month.

Respectfully,
GEO. W. GOETHALS,
Chairman and Chief Engineer.

Photographs of Historical Interest.

Six photographs of historical interest have been framed with native woods and placed in the outer offices of the Chief Engineer at Culebra. They are—name of wood attached in each case: Barbacoas Bridge, guayacan; Protestant Church, (Christ Church) Colon, cacique; American dredge, F. deLesseps, black palm; View on the Panama Railroad, cocobolo; Photograph of "John Aspinwall," a Colon negro of local notoriety subject of verses by J. S. Gilbert, guayacan; Map of Colon in 1865, acacia.

A parade ground and target range are being laid out for the Tenth Infantry back of the officers' quarters at Camp Otis.

RAILS USED IN PANAMA.

Samples Collected for Exhibition Purposes.

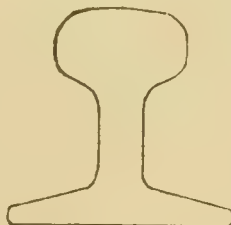
Samples of rails used at various periods on the Panama railroad and canal work have been collected, and may be seen in the office of the Chairman at Culebra. Cuts of cross sections of them are published herewith.

The first track used consisted of flat iron bars laid upon stringers, and this was the rail on the section from Aspinwall to Gatun, 1850-1852.



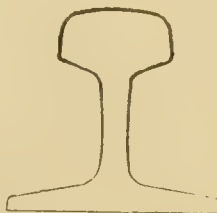
1
Inverted U Rail
1853-1869

The inverted U rail, shown in cut No. 1, weighed 53 pounds to the yard, and was the first rail used on the completed railroad, 1853- to 1869.



2
70 Pound Wrought Iron Rail
1865-1879

From 1865 to 1879 the 70-pound wrought iron rail, shown in Cut No. 2, was used. From 1876 to 1907 the first steel rail was used. It is shown in Cut No. 3. It weighed 50 pounds.



3
First Steel Rail
1876-1907

The wrought iron rail was sold for \$45 per ton and more than enough was realized from its sale to buy new steel rail, which was purchased in England at 6 pounds 5 shillings per ton.

Cuts No's. 4 and 5 show the Belgian rail used by the French canal company in construction work from 1882 to 1899. This rail weighed 50 and 60 pounds to the yard.

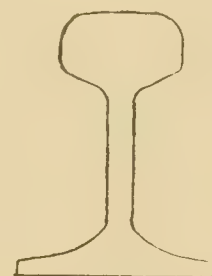
Cut No. 6 is a cross section of the 60-pound steel rail of American manufacture used by the Isthmian Canal Commission from 1905

to the present time, and by the Panama railroad from 1906 to 1910.



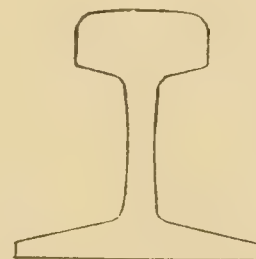
4
50 Pound Belgian Rail
1882-1899

Cut No. 7 is a section of the 90-pound American rail placed on curves of the Panama

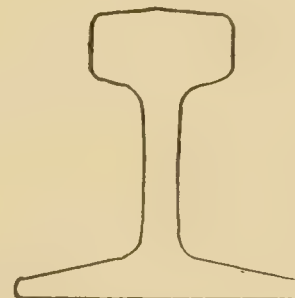


5
60 Pound Belgian Rail
1882-1899

railroad in 1908. In 1910 open-hearth rail with 0.75 carbon was adopted as standard.



6
60 Pound Steel Rail
1905-1913



7
90 Pound Steel Rail
1908-1913

The samples are in 12-inch lengths and are mounted with the original fastenings upon a tie taken from the roadbed between Mindi and Gatun in 1912. The tie is of balsamo and was probably laid about 1884.

Bids for the structural steel framework for the permanent administration building at Balboa will be opened on March 6 at the Washington office.

SAN BLAS MISSION.

Exclusive Indians Invite American Woman to Establish School.

Miss Annie Coope, the American missionary to the Indians, who has been in Colon several months has left for the San Blas country for the purpose of establishing a school for the children and doing such evangelistic work as is possible among the Indians. Her going was in response to an invitation from the chief of one of the islands of the Mulatas group. She was accompanied by two Indians who were sent to escort her and made the trip in a small sail boat, leaving Colon on Thursday, February 20. She took with her a small organ at the request of the chief, and a large supply of household goods.

Miss Coope came to the Isthmus in 1909 accompanied by the Rev. George H. Penny, superintendent of the Christian Mission, a sect which has headquarters in Barbados. On November 12, the missionaries left Colon and proceeded to Nombre de Dios where they waited a month for the mail boat which runs between Colon and the Mulatas Islands. Two landings were made on the islands but Miss Coope and her companion were not permitted to remain on shore, being forcibly ejected from Rio Diablo. The missionaries returned to the Isthmus and Miss Coope left soon after for work among the Caribs of Venezuela, and in Mexico, and California. She returned to Colon in October, 1912, where she has been waiting the summons from Chief Charley Robinson. The chief is said to be an intelligent Indian. He was educated in the United States and has progressive ideas regarding the future of his people. The San Blas Indians have steadfastly refused all efforts of the white man to civilize them. Nominally, they are subject to the government of Panama, but they pay no taxes and have their own form of government. They trade, principally in coconuts, with the merchants of Colon, bringing their products down in sail canoes. Their territory lies on the Caribbean coast from Mandinga Bay to the Gulf of Uraba, and from the coast extending inland to the headwaters of the streams that flow into the Atlantic, and includes the Mulatas Islands, a small group lying just off the coast. Efforts have been made by Roman Catholics to establish mission work among them, but without success; from time to time Protestant missionaries have endeavored to enter their country, but until Miss Coope became acquainted with Charley Robinson no encouragement was ever given to any religious sect to establish mission schools there.

Women's Organizations.

The subject of the general meeting of the Cristobal Women's Club on Wednesday, March 5, will be woman suffrage. Other meetings scheduled for the month are as follows: March 12, Home Department, subject, Entertaining our Guest; March 19, Art and Literature department, subject, Modern pictures of children; March 26, meeting of the executive board at the Commission clubhouse at 9 a. m.

On Wednesday afternoon, February 19, the Gatun Woman's Club held a reception in honor of two of its members, Mrs. Charles H. Stoddard and Mrs. J. S. Hanna, who are leaving the Isthmus. A short program of music was furnished and refreshments were

served by the house committee. Mrs. Stoddard is the first vice president of the Canal Zone Federation of Women's Clubs, and was formerly president of the Gatun club. Mrs. Hanna has been treasurer of the Gatun club since 1909. Mrs. Barte has been elected to fill the office of treasurer for the remainder of the year.

The Tuesday morning lenten meetings of the Woman's Altar Guild of St. Luke's Chapel Ancon, have been held at members' homes as follows: On February 11, with Mrs. Barber; on February 18 with Mrs. De Kanstine, at the Hotel Tivoli; on February 25, with Mrs. Dodge at the American Legation in Panama. Hostesses for the remaining three weeks are Mrs. De Kanstine, on March 4; Mrs. Bishop on March 11, and Mrs. Feuille on March 18. The guild members are making garments for a vacation home for little girls near Morristown, N. J.

The annual public meeting of the Woman's Foreign Missionary Society of the Methodist Episcopal Church was held at the sea wall church, Panama, on Sunday morning, February 16, this meeting taking the place of the regular morning service. The president of the society, Mrs. Harry Compton, read a paper on Missionary work in South America, Mrs. Rounds gave a general outline on the missions of the Methodist church, and Miss Williams sang. The next meeting of the society will be held at the home of Mrs. E. M. Kayser, Ancon, on Saturday, March 1. The class is studying China.

Opening of Hotel Washington.

The date of the official opening of the Hotel Washington on Colon Beach has been fixed for the evening of March 29, when a grand ball will be given in the hotel by Canal Zone Post No. 40, American Veterans of Foreign Service. Cards of admission will be limited and will not be transferable. The price will be \$10.00 for each couple, and this will include the ball, luncheon, and transportation by special train to which no one will be admitted except holders of cards. Requests for cards will be numbered as received and should be addressed to Captain Courland Nixon, Chairman of the General Committee, or to L. E. DuBois, Adjutant, Cristobal, Canal Zone.

The interior painting and decorating of the new Hotel Washington at Colon will not be done for about a year, in order that the masonry and plaster may have time to season.

Washington's Birthday.

The first five grades of the Gatun public school entertained the upper school with a program consisting of patriotic songs and recitations in honor of Washington's Birthday on Friday afternoon, February 21.

Washington's Birthday was celebrated by Canal employes in various ways; the united Masonic lodges spent the day on a picnic at Taboga Island; the Cristobal and Gatun Sunday schools had an excursion to Toro Point; a party of Gatun residents went to Chorrera. There were dances at the Tivoli Hotel and at Kangaroo Hall, Empire.

Married.

PAUL-PITTMAN—On February 20, at St. Luke's Hospital Chapel, Ancon, Miss Katherine Key Pittman, of Memphis, Tenn., to Mr. Seymour Paul, of Harrisonburg, Va., the Reverend Henry A. Brown officiating. Canal Zone residence, Ancon.

DUNGAN-DOTY—On February 1, at Oak Park, Ill., Miss Geraldine Doty, of Oak Park, Ill., to Mr. Chevis Patterson Dungan, formerly of Corozal. Residence, Oak Park, Ill.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

Moving picture schedule for week March 3 to 8: Monday, Empire; Tuesday, Culebra; Wednesday, Corozal; Thursday, Gatun; Friday, Cristobal; Saturday, Gorgona; Friday, Porto Bello.

COROZAL.

The moving picture schedule was changed from Monday night to Friday, February 28 on account of the Tenth Infantry band concert at Corozal on Monday night.

Washington's Birthday was observed by having "open house." In the evening Gatun's duckpin team lost three games to Corozal. The following are results of the games:

Corozal.				Gatun.			
Dalton...	79	86	92	Sims	88	97	71
Ryan...	72	82	84	Dunlap	89	86	88
Wilkins...	85			Dunst	72	88	100
Conner...	84	79	88	Gebbart	88	96	83
Tougher...	84	79	98	Davis	83	79	87
Webb...		73					

Totals... 404 399 450 420 446 429

On Thursday, February 20, a stag smoker was held at the Corozal Y. M. C. A., with the following for a program: Piano solo, Mr. McMahon; Scotch dialect solo, James Cullen; readings, Mr. Fenstermacher; flying ring act, R. A. Mitchell; hypnotic act, Mr. Haleen; refreshments; piano solo, Mr. McMahon; vocal solo, Mr. Sloan; comedy singing and dancing act, Alvia and Alvia; Irish dialect reading, Dick Roberts, Jr.; selection, Corozal male quartet; readings from Faust, Mr. Fenstermacher; vocal solo, Mr. Cullen; "The Lost Child," Mr. J. E. Cunningham; wrestling bout, Mr. Huber of Gatun and Mr. Andrews of Empire, result, draw.

EMPIRE.

On Thursday evening, February 20 the Culebra Y. M. C. A. duckpin team bowled the Empire team on the latter's alleys and lost three games. The following were the scores:

Empire... 492 469 473 Culebra... 431 429 439

An all-around championship athletic contest will be started the first of March. There will be two divisions of the gymnasium class, the advanced and the elementary squads, with first, second, and third ribbons for each division. Twenty different events will be run off during the contest, two each night after the gymnasium class. All men not now enrolled in the gymnastic class will be welcomed in the contest. One evening each week during the gymnastic class, there will be a demonstration of medical gymnastics, giving such exercises as will be of benefit in case of stooped shoulders, lowered right shoulder, flat-footedness, and constipation. On the other class night there will be a short talk on anatomy and physiology.

GORGONA.

Due to the musical entertainment the Gymnasium classes were changed to Monday and Wednesday, but will meet on regular days, Tuesdays and Thursdays, from now on.

Three hundred and fifty people attended motion pictures on Friday evening.

Gorgona Y. M. C. A. will put on a Country School entertainment, in a few weeks. The regular date for the entertainment has not been set.

The Edith Harris Scott Company will give an entertainment on March 5, 1913. On the 8th of March a special program will be given at the Y. M. C. A. for a benefit.

The Gorgona Chorus gave their regular concert on Thursday evening, the program is as follows: Orchestra, selection; Nancy Ma Yellow Rose, Geibel; Song of the Pedlar, Williams, Chorus; Duet (greeting), Mendelssohn; vocal solo (Onken), selected; Piano Solo, selected, Mrs. Regan; The song of the Triton, Taylor; Sleep Little One Sleep, Woole, chorus; Orchestra, selected; Anchored, Watson; Shoozy Shoo, Ambrose, chorus; soprano solo (La Tosca), Mrs. Boyd; Sweet and Low, Last Rose of Summer, We're going to leave Gorgona; contralto solo, Mrs. Pierson; Anvil chorus, Verdi; Soldiers chorus, Gounod, assisted by the 15-piece orchestra.

The high scores for the week (over 100): Sims, 100, 107; King, 111; Dunlap, 100, 104; Dunst, 103, 102; Norwick, 100; Seeth, 113; Ruchte, 108; Geheardt, 100; 113.

High scores in the ragtime duckpin tournament during the week, were as follows: Two Men—Sims and Roper, 593; Sims and Norwick, 597; Individual—Stoebr, 114; Stewart, 115; Davis, 125; Three games for Individual—Davis, 321; King, 304; Roper, 307.

GATUN.

After serving the Executive Council as its recording secretary for the past three years Mr. W. N. Windes.

has resigned on account of his leaving the Isthmus. Resolutions were drawn up in his honor.

The Edith Harris Scott Concert Company will appear at Gatun on Friday, March 7.

Group pictures of the Executive Council and a larger number of members were taken on Friday and will be on sale in about a week.

A change in the dates of the anniversary celebration has been thought advisable. The "smoker" will be held on Tuesday, March 4 and the public exercises and reception on Wednesday, March 5. Excellent programs have been arranged for both nights. The "smoker" will be for men only and will consist mostly of vaudeville numbers. The second night's program will be more formal and will include an address by Judge Thos. E. Brown of the Supreme Court of the Canal Zone. Lieut. Col. Wm. L. Sibert will preside. Following the exercises refreshments will be served on the first floor.

A basketball team representing the I. C. C. defeated a team from the McClintic-Marshall and American Bridge Companies on Wednesday evening, February 19.

CRISTOBAL.

The Cristobal Debating and Literary Society held its first meeting Wednesday night. The debate for the evening was: "Resolved, that there is more pleasure in Pursuit than in Possession." Messrs Daley and Walsh were the opposing speakers. The next meeting of the society will be held on Friday night, February 28, the subject being: "Resolved, that the Canal Zone should be depopulated upon completion of the Canal."

There was an attendance of 172 at the moving picture entertainment, Saturday night, February 22. The next in the series of moving pictures will be given Thursday night February 27.

The Edith Scott Concert Company will present their entertainment at Cristobal on March 4. Reserved seats will be on sale at the desk on March 1. Members free.

The Candlepin tournament held on February 22, was participated in by 15 members of the various Associations on the Zone, and prizes were won as follows: Frist, G. K. Weston, Cristobal; Second, Chas. Cotton, Cristobal; Third, T. H. Hurst, Cristobal.

In the married folks monthly tournament held on the night of February 22, scores were made as follows:

Mr. and Mrs. Bell...	93	148	186	427
Mr. and Mrs. Burrell...	99	148	166	413
Mr. and Mrs. Burn...	98	158	150	406
Mr. and Mrs. Landers...	63	174	158	395
Mr. and Mrs. Cotton...	72	170	145	387
Mr. and Mrs. Weston...	83	146	158	387
Mr. and Mrs. Buser...	75	149	158	382
Mr. and Mrs. Collins...	70	136	146	352

Ladies prizes for high score in each game were won by Mrs. Burrell in Newport and Candlepins, and Mrs. Bell in duckpins. Prizes for the gentlemen with high score in each game were won by Mr. Burn in Newport, Mr. Landers in Candlepins and Mr. Bell in duckpins.

Yacht on Fire.

The Cristobal fire department was called upon in the afternoon of February 21 to extinguish a fire in the coal bunkers of the private yacht *Rhielair* which is owned by D. G. Reid of New York, and chartered by H. C. Frick. The fire, which was caused by spontaneous combustion, and had been burning for more than a day when the department was called upon, was put out by flooding the hold of the vessel with four lines of hose, two of which were from the tug *Porto Bello*. The yacht, the estimated value of which is \$160,000, was only slightly damaged by the fire.

Ancon Crusher.

The following is a statement of rock crushed at Ancon Quarry during the week ending February 22:

DATE.	Hours worked.	Cubic yards.
February 17.	8.15	2,762
February 18.	9.00	2,798
February 19.	10.40	2,924
February 20.	10.50	3,224
February 21.	11.15	3,499
February 22 (Holiday).		
Total.	50.00	15,207

Lost—On train No. 7, February 24, from Colon to Pedro Miguel, a watch fob consisting of black ribbon and small locket with a chip diamond on one side and the monogram "V. R." on the other. Finder will please return to Vincent G. Raymond, Gorgona.

OFFICIAL CIRCULARS.

French Scrap and Equipment.

CULEBRA, C. Z., February 20, 1913.

CIRCULAR No. 426-A:

Hereafter, no French scrap of any description will be loaded by anyone without direct instructions from the Chief Quartermaster, and no parts shall be removed for repairing other equipment.

In case it becomes necessary for construction purposes to remove French equipment, the Chief Quartermaster's written instructions shall first be secured.

The French scrap made in the shops from repairing equipment now in use will be kept separate from other scrap, and no shipments made unless directed by the Chief Quartermaster.

Failure to observe this order may result in the discharge of the employee concerned.

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Half Rate Mileage.

CULEBRA, C. Z., February 21, 1913.

CIRCULAR No. 420-F:

In the future the use of half-rate mileage tickets will be restricted:

1. To the employee himself. Tickets will not be issued in favor of more than one employee.
2. To relatives of employees residing with them on the Isthmus, who are not engaged in independent business.
3. To relatives visiting the Isthmus, whether residing with the employee or not.
4. In every case where a relative is to be included on a half-rate mileage ticket (except wives and children) the name of such relative must be furnished.

GEO. W. GOETHALS, Chairman.

Loss of Coal in Transit.

CULEBRA, C. Z., February 18, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

In order to prevent undue loss of coal in transit during the dry season, it is requested that Lidgerwood flat cars used in coaling steamshovels and other equipment be provided with suitable temporary or removable base-boards so that this loss may be kept at a minimum; or in lieu of this, that the amount of coal with which they are customarily loaded be sufficiently reduced to obviate this loss.

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Regulations Governing the Use of Water in the Canal Zone.

CULEBRA, C. Z., February 20, 1913.

CIRCULAR No. 477:

Section 10 of the Rates, Rules and Regulations Governing the Use of Water in the Canal Zone reads as follows:

No person or persons shall remove, obstruct, injure, molest or otherwise tamper with any fire hydrant, standpipe, fire plug, tank, hand-grenade, fire extinguisher, hose, hose reel, cart, engine, harness, valve, box or cover stop cock, stop box or cover, or any other tool, fixture, apparatus, pump, machinery, or building of any kind whatsoever connected with or necessary to the proper and efficient operation of the water systems or for fire protection within the Canal Zone. Any person or persons violating any provision of this section shall be deemed guilty of a misdemeanor and, upon conviction, shall be punishable by a fine of not less than five dollars (\$5) nor more than twenty-five dollars (\$25), or by imprisonment for a term not exceeding thirty days, or by both such fine and imprisonment; *Provided, However,* That the provisions of this section shall not apply to firemen in the regular discharge of their duties and duly authorized representatives of the Division of Municipal Engineering.

Several instances of infraction of these rules and regulations on the part of Commission employees have recently been brought to my attention, and the Heads of Departments and Divisions are directed to have copies of this circular posted in conspicuous places, in order that all employees may be fully acquainted with the same. The Police Department is instructed to rigidly enforce these rules and regulations.

GEO. W. GOETHALS, Chairman.

Mail for the Depot Quartermaster.

MOUNT HOPE, C. Z., February 21, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

All mail intended for Mount Hope Depot, Printing Plant, Dry Dock Store, or Cristobal Shop Store, should be addressed to "Depot Quartermaster, Mount Hope." The only exception is that envelopes containing matter for THE CANAL RECORD should, in addition to this address, be plainly marked "Canal Record." This request is made that mail may be handled expeditiously in regular routine manner.

C. NIXON,

Approved:

R. E. WOOD,

Acting Chief Quartermaster.

Rainfall from February 2 to 22, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section</i> -	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	.08	11-18	.22
Balboa.....	.09	22	.49
*Miraflores.....	1.09	19	2.35
Pedro Miguel.....	.03	19-22	.07
Rio Grande.....	.22	18	.47
<i>Central Section</i> -			
Culebra.....	.46	18	.77
*Camacho.....	.28	18	.44
Empire.....	.63	18	.78
Gamboa.....	.39	18	.68
*Juan Mina.....	.36	17	.94
Alhajuela.....	.19	17	.22
*El Vigia.....	.52	20	.86
*Gorgona.....	.17	18	.28
*Frijoles.....	2.29	18	3.03
*Monte Lirio.....	1.10	17	2.52
<i>Atlantic Section</i> —			
Gatun.....	1.42	17	2.85
*Brazos Brook.....	2.21	17	4.14
Colon.....	.72	17	1.65
†Porto Bello.....	.91	1	†1.82

*Standard rain gauge—readings at 5 p. m., daily. Automatic rain gauge at unstarred stations—values midnight to midnight. †To 5 p. m., February 21.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, February 22, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela	Gamboa.	Gatun Lake.
Sun., February 16.....	126.0	92.2	48.2	48.2
Mon., February 17.....	126.5	92.7	48.4	48.4
Tues., February 18.....	127.5	92.2	48.6	48.5
Wed., February 19.....	127.5	93.0	48.7	48.6
Thurs., February 20.....	126.2	92.4	48.7	48.6
Fri., February 21.....	126.0	92.2	48.7	48.7
Sat., February 22.....	125.9	92.2	48.7	48.7
Height of low water to nearest foot.....	125.0	92.0	44.0	

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending March 8, 1913. (75th meridian time):

DATE.	High		Low	
	A.M.	A.M.	A.M.	P.M.
March 2.....		5.20	11.50	5.57
March 3.....	12.12	6.36	1.17	7.15
March 4.....	1.30	7.41	2.17	8.15
March 5.....	2.28	8.33	3.00	9.00
March 6.....	3.07	9.15	3.35	9.38
March 7.....	3.48	9.50	4.04	10.12
March 8.....	4.18	10.23	4.32	10.42

Misdirected Letters.

ANCON, C. Z., February 26, 1913.

The following insufficiently addressed letters originating in the United States or its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Arnold, Mrs. John	Hersh, Mrs. Walter
Andrade, Cristobal	Hiptinstall, Jno. O.
Bingham, Hon. T. A.	James, Thomas A. L.
Berrell, S. B.	Kennedy, John
Burnes, Mrs. J. C. (2)	Lindo, David
Breckenridge, Mrs. Ethel-	
bert L. D.	Mack, Mrs. Lena
Buchanan, Buck	Menetti, Saturnino
Caraher, Patrick	Miller, Miss Eunice G.
Cartier, Henry F.	Moore, Frank B.
Christy, Mrs. L. A.	Moran, Wm.
Cooper, J.	Morna, D.
Dickerson, D. E.	Morant, George
Eddington, E. Jr	Morissay, John
Edwards, A. J.	Offerbacker, Wilfred
Flynn, Peter	Thewatt, Robert P.
Frazier, J. O.	Twitchell, Master Jim
Gallagher, J. R.	Whitaker, Willis
Gowen, Dorothy	Whitton, A. C.
Greene, Walter E.	

STOLEN—One Londres silver watch, and one gold ring, set with reconstructed ruby. Taken from House 113, Room 23, East Balboa. Will pay \$100 U. S. C., for return of ring, no questions asked. R. H. Hull, East Balboa, C. Z.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning February 24 1913:

FRESH MEATS.	Price.
Mutton—Stewing, per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire, forequarter (not trimmed, 10 pounds and over), per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Leg (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	16
Chops, per pound.....	24
Loin for roasting, per pound.....	24
Cutlet, per pound.....	28
Pork—Loin chops or roast, per pound.....	16
Breast—Suet, per pound.....	2
Soup, per pound.....	5
Stew, per pound.....	8
Plate, per pound.....	9
Corned, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Chuck roast (3 pounds and over), per pound.....	12
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds), per pound.....	18
Sirloin roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, chuck, per pound.....	12½
Round, per pound.....	13
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds), per pound.....	20
Tenderloin (Western), per pound.....	20
Venison (Imported), Stew, per pound.....	6
Forequarter, (not under 6½ pounds), per pound.....	9
Rack (not under 5½ pounds), per pound.....	20
Saddle (not under 7½ lbs.), per pound.....	20
Leg (not under 9 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
MISCELLANEOUS.	
Livers—Beef, per pound.....	11
Calif, each.....	60
Half, each.....	30
Steak, Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	11
Frankfurter, per pound.....	12
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	19
Sweetbreads—Beef, per pound.....	30
Eggs, fresh, dozen.....	32
one-half dozen only.....	16
Bluefish, per pound.....	15
Halibut, fresh, per pound.....	15
Oysters, quarts, per keg.....	40
Shad, fresh, each.....	50
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds each.....	1.25
Fancy roasting, corn fed, about 4½ pounds each.....	1.00
Fowls, each.....	1.00
Ducks, (Wester, about 4½ pounds), each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	35
Ducks, blackhead, pair.....	60
teal, pair.....	50
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants, per pair.....	1.30
CURED AND PICKLED MEATS.	
Ham—Sugar cured, per pound.....	20
Sliced, per pound.....	22
Half, for boiling, per pound.....	21
Boiled, per pound.....	28
Hocks, per pound.....	28
Beef, salt, family, per pound.....	12
Bacon—Breakfast, whole piece, per pound.....	25
Sliced, per pound.....	26
Ham, Lunch, per pound.....	32
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00

Pigs' feet, per pound.....	9
Tongues, per pound.....	18

DAIRY PRODUCTS.

Butter—Creamery, special, per pound.....	40
Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Parmesan, per pound.....	35
Gouda, per pound.....	34
Snappy, cake.....	**20
Milk (Certified), per bottle.....	**20
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	25
gallon.....	50

VEGETABLES AND FRUITS.

Beets, per pound.....	3
Celery, per head.....	11
Cabbage, per pound.....	3
Cucumbers, per pound.....	11
Carrots, per pound.....	3
Lettuce.....	7
Onions, per pound.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	2
Parasnis, per pound.....	3½
Parsley, bunch.....	3
Squash, per pound.....	3
Turnips, per pound.....	3
Tomatoes.....	9
Apples, per pound.....	5
Grape fruit, each.....	4
Lemons, dozen.....	24
Limes, per 100.....	80
Oranges, Jamaica, per dozen.....	12

*Indicates reductions from last list.
**Indicates 4 cents allowed for return of bottle.
†Indicates advances on last list.
‡Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock supply next lightest weight is supplied and refund note sent for difference.
§Sold only from Commissaries; no orders take for delivery.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon and Balboa, during the week ending February 22:

Panama, February 16, from New York, with 10 cases incandescent lamps, 15 cases insulated wire, 133 barrels sand, for Mechanical Division; 10 cases drugs, for Sanitary Department; 15 reels insulated cable, 20 cases electrical material, 90 cases castings, for First Division; 150 packages castings, for emergency dams; 8 cases dredge sleeves, for Atlantic Division; 56 cases books, 110 packages K. D. barrels, 7 pieces steel beams, 117 cases paper, 16 cases copper tacks, 100 bundles plain wire, 18 bales mops, 14 cases rivets, 17 cases castings, 20 crates air brake material, 50 rolls insulating paper, 12 cases lubricating oil, 400 bundles shovels, 1,200 drums lead in oil, 199 pigs lead, for stock; and a miscellaneous cargo, the whole consisting of 3,075 packages, weighing 375 tons.

Sixola, February 16, from New York, with 241 cases electrical material, 12 cases castings, 9 pieces pipe, for First Division; 250 kegs spikes, 21 cases paint, 54 barrels plastic magnesia, 28 pieces lumber, for stock.

Parismina, February 17, from New Orleans, with 1,126 pieces lumber, for Mechanical Division; 86 cases conduits, for First Division; 100 cases signal oil, 20 cases paint in oil, 147 pieces lumber, 1,134 pieces cross ties, 65 pieces castings, for stock.

Prinz Joachim, February 17, from New York, with 25 kegs bolts, for stock.

Lewis Luckenbach, February 19, from San Francisco, with 200 pigs lead, for stock.

Almirante, February 19, from New York, with 32 cases electrical material, for First Division; 50 drums calcium carbide, 250 kegs track spikes, for stock.

Manx Isles, February 19, from Baltimore, with 12,000 cases dynamite, 180 kegs white zinc, 133 cases glass, 125 barrels brick, for stock; 1,478 pieces car wheels, for Mechanical Division; 9,000 pieces conduit, 46 packages rack castings, 98 packages fender castings, 356 packages gate spares, 86 cases gate machinery, for First Division.

Allianca, February 22, from New York, with 11 cases fire extinguishers, 87 cases coupler pins, 16 sacks castings, 141 barrels sand, for Mechanical Division; 12 barrels terminal bells, for First Division; 43 cases caskets, for Sanitary Department; 28 cases iron railings, 70 packages signal material, for Panama Railroad Company; 10 barrels molasses, 100 bundles baskets, 48 bales rubber hose, 36 cases lanterns, 20 crates stove pipe, 80 cases paint, 20 barrels creosote oil, 15 reels wire rope, 61 pieces steel plates, 46 bundles steel bars, 729 pieces iron pipe, 720 pieces pig iron, 83 bundles shovels, 16 sacks castings, 100 barrels sulphate alumina, for stock; and a miscellaneous cargo, the whole consisting of 2,980 packages, weighing 450 tons.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg American Line, and of the United Fruit Company's Line on the Atlantic side of the Isthmus, and of the Panamanian Steamship Company's local service on the Pacific side.

NEW YORK TO CRISTOBAL.

Colon.....	P. R. R. Friday.....	Feb. 21
Advance.....	P. R. R. Friday.....	Feb. 28
Advance.....	P. R. R. Friday.....	Feb. 28
Panama.....	P. R. R. Friday.....	Mar. 6
Allianca.....	P. R. R. Wednesday.....	Mar. 12
Colon.....	P. R. R. Tuesday.....	Mar. 18
Advance.....	P. R. R. Tuesday.....	Mar. 26
Panama.....	P. R. R. Monday.....	Mar. 31
Allianca.....	P. R. R. Saturday.....	Apr. 5
Colon.....	P. R. R. Saturday.....	Apr. 12
Advance.....	P. R. R. Saturday.....	Apr. 15
Panama.....	P. R. R. Friday.....	Apr. 25
Allianca.....	P. R. R. Thursday.....	May 1
Colon.....	P. R. R. Wednesday.....	May 7
Advance.....	P. R. R. Tuesday.....	May 13

CRISTOBAL TO NEW YORK.

Allianca.....	P. R. R. Friday.....	Feb. 28
Colon.....	P. R. R. Thursday.....	Mar. 6
Advance.....	P. R. R. Wednesday.....	Mar. 12
Panama.....	P. R. R. Tuesday.....	Mar. 18
Allianca.....	P. R. R. Monday.....	Mar. 24
Colon.....	P. R. R. Sunday.....	Mar. 30
Advance.....	P. R. R. Monday.....	Apr. 7
Panama.....	P. R. R. Saturday.....	Apr. 12
Allianca.....	P. R. R. Friday.....	Apr. 18
Colon.....	P. R. R. Thursday.....	Apr. 24
Advance.....	P. R. R. Wednesday.....	May 1
Panama.....	P. R. R. Wednesday.....	May 7
Allianca.....	P. R. R. Tuesday.....	May 13

NEW YORK TO COLON.

Prinz August Wilhelm H.-A.....	Saturday.....	Feb. 22
Pastores.....	U. F. C. Saturday.....	Feb. 22
Metapan.....	U. F. C. Wednesday.....	Feb. 26
Prinz Sigismund.....	H.-A. Saturday.....	Mar. 1
Tivives.....	U. F. C. Saturday.....	Mar. 1
Tagus.....	R. M. Saturday.....	Mar. 1
Zacapa.....	U. F. C. Wednesday.....	Mar. 5
Prinz Joachim.....	H.-A. Saturday.....	Mar. 8
Sixola.....	U. F. C. Saturday.....	Mar. 8
Almirante.....	U. F. C. Wednesday.....	Mar. 12
Prinz Eitel Friedrich.....	H.-A. Saturday.....	Mar. 15
Oruba.....	R.-M. Saturday.....	Mar. 15
Carrillo.....	U. F. C. Saturday.....	Mar. 15

COLON TO NEW YORK.

Prinz Joachim.....	H.-A. Tuesday.....	Feb. 25
Sixola.....	U. F. C. Tuesday.....	Feb. 25
Almirante.....	U. F. C. Thursday.....	Feb. 27
Prinz Eitel Friedrich.....	H.-A. Monday.....	Mar. 3
Carrillo.....	U. F. C. Tuesday.....	Mar. 4
Oruba.....	R. M. Tuesday.....	Mar. 4
Santa Marta.....	U. F. C. Thursday.....	Mar. 6
Prinz August Wilhelm H.-A.....	Tuesday.....	Mar. 11
Metapan.....	U. F. C. Thursday.....	Mar. 13
Prinz Sigismund.....	H.-A. Monday.....	Mar. 17
Tivives.....	U. F. C. Tuesday.....	Mar. 18
Clyde.....	R.-M. Tuesday.....	Mar. 18

NEW ORLEANS TO COLON.

Abangarez.....	U. F. C. Saturday.....	Feb. 22
Heredia.....	U. F. C. Wednesday.....	Feb. 26
Atenas.....	U. F. C. Saturday.....	Mar. 1
Parismina.....	U. F. C. Wednesday.....	Mar. 5
Turrialba.....	U. F. C. Saturday.....	Mar. 8

COLON TO NEW ORLEANS.

Turrialba.....	U. F. C. Thursday.....	Feb. 27
Cartago.....	U. F. C. Saturday.....	Mar. 1
Abangarez.....	U. F. C. Thursday.....	Mar. 6
Heredia.....	U. F. C. Saturday.....	Mar. 8

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers for New York, via Kingston and Santiago de Cuba, sail thus: the *Prinz Joachim* and the *Prinz August Wilhelm* on alternate Tuesdays at 10 a. m., and the *Prinz Sigismund* and the *Prinz Eitel Friedrich* on alternate Mondays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays, at 3 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m.

The Panamanian Steamship Company's steamer *Panama* will sail from Panama for Aguadulce and Pedregal on March 1, 11, and 19.

CANAL



RECORD

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The Canal Record

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Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Tortola and Tortolita Islands Under American Jurisdiction.

Claimants to property on the islands of Tortola and Tortolita, situated off Punta Bruja, not far from the Pacific entrance to the Canal, have raised the question as to whether the islands are within the limits of the Canal Zone, with the view of presenting their claims before the Joint Commission in case the United States has jurisdiction. It has been determined that the islands are well within the 3-mile limit, and that they are considerably less than five miles from the center line of the Canal. Tortola, the larger of the two islands, is situated about 11,000 feet from Punta Bruja, and 18,000 feet from the Canal prism. Tortolita is about 12,000 feet from Punta Bruja, and 16,000 feet from the center line of the Canal.

Work at Corozal Farm.

The farm at Corozal for the care of the disabled employees of the Commission, the establishment of which was approved by the Chairman in November, 1912, has, so far, had only six applicants for admission. In order that the work of the farm might be started, on February 27, a force of 45 laborers was put to work for the purpose of clearing, ploughing, and planting a portion of the land lying to the north and east of Corozal. The employment of these men, pending the admission of a sufficient number of disabled inmates, or the transfer of the insane, was for the purpose of taking advantage of the beginning of the dry season to prepare the ground for the crops that will be planted. After this heavy work by the present force of laborers is completed, and the disabled and partially disabled are housed at the farm, all necessary work will have to be done by the labor of inmates.

The insane will not be transferred from the Ancon asylum to Corozal until the present quarters occupied by gold employees are vacated, and such alterations made in the buildings set aside for the asylum, as will

make them suitable for use as an asylum for the insane. There are sufficient barracks on hand at present to house all the disabled that may be stationed at the farm.

Naos Island Breakwater.

It is the present intention to build the Naos Island breakwater as far as practicable above high tide, with a width at the top sufficient for a railway track and a single roadway. It is proposed to raise the dike to elevation plus 25 feet to a point at such a distance from the island as will give a $\frac{1}{2}$ -per cent grade. In this manner, elevation plus 19 feet will probably be reached about 1,000 feet from the island. The highest elevation at present is 15 feet. This elevation exists in two places, one about 5,000 feet from the island, and the other at the island itself, while at one point, where the breakwater has settled, the elevation is only $6\frac{1}{2}$ feet. In order to prevent inroads from wave action, it is probable that the breakwater will be armored for the greater part of its length. Hard rock from Culebra Cut will be used for this purpose, and, as far as possible, for the causeway. Should the supply become exhausted before the completion of the work, the remainder of the rock required will be obtained from borrow pits.

Part of New Hotel Washington to be Opened.

In order to provide accommodations at the earliest possible moment for the tourists who are coming in increasing numbers, the second floor of the new Hotel Washington at Colon will be opened to guests, probably about March 10. The last of the furniture for the hotel, consisting of a consignment of bedsprings, is due on the *Advance* on March 7. Unfinished work on the second floor of the hotel is to be deferred, so far as practicable, until the close of the travel season. As the dining room and office are not yet completed, arrangements will be made for the people stopping at the new hotel to take their meals at the old Washington. A suitable reduction from the established rates will be made to guests for any inconvenience they may be subjected to by this arrangement, which is placed in effect solely for the purpose of accommodating Canal visitors, who, owing to the present crowded conditions, might otherwise have some trouble in finding a place to stay.

Tourist Travel Heavy.

The tourist travel to the Isthmus during February was heavier than in any previous month since the beginning of the Canal work. The number of persons arriving "in transit" during the month was 6,238, practically all of whom were tourists. This is much higher than the record for January, when the persons arriving "in transit" numbered 4,044, about 80 per cent of whom were tourists. Of the number of persons "in transit" in February, 3,323 arrived on ships that carried tourists only. The total number of vessels arriving

at the ports of Colon and Cristotal in February was 108, as compared with 130 for January. Among the vessels bringing visitors to the Canal in February were three private yachts, the *Rheclair*, the *Vergemere*, and the *Virginia*. In addition to the number of persons "in transit" in February, there were the crews of six vessels of the South Atlantic Squadron, numbering 3,348 persons, and, in January, 29 vessels of the same squadron, with a complement of 11,203 men, a total of 14,551 officers and men, all of whom were given an opportunity of viewing the Canal. In view of the increased tourist business, an additional car, converted at Gorgona shops from a Lidgerwood flat, has been placed in the sightseeing service, making three cars in all available for trips over the Canal.

Temporary Coal Trestle at Balboa.

The construction of a temporary coal trestle at Balboa has been authorized. It will be built on the site of the slide that carried away a part of the lumber dock in August of last year, and will be a 6-pile bent trestle, placed on 12-foot centers, constructed with side chutes, so that Western dump cars, or Rodgers ballast cars, can dump directly into the middle of a barge alongside. Treated piles will be used for the bents, and it is expected that much of the old lumber and piling left from the wreck of the lumber dock can be utilized in the work. The trestle will be built for two years' use, and the estimated cost is \$9,121.70. About 4,650 tons of coal are handled at Balboa each month.

Panama City Tramways.

Construction work on the lines of the Panama Tramways Company is well advanced, and it is expected that the system will be ready for operation in about three months' time. All the track has been laid, with the exception of an extension at the Balboa end, and a spur, which will probably be installed from the main line in Las Sabanas, to the new bathing pavilion on the seashore in the Bella Vista estate. The following general route has recently been determined upon for the extension of the company's track from the present terminus near the I.C.C. hotel at East Balboa to the present wharves at Balboa: Parallel with the Balboa highway to a point west of the iron bridge, thence between the Commission's power plant and the Union Oil Company's pumping station to the dump, thence over the dump and around the hill to the present dock buildings at Balboa.

The company's car shed is in course of erection, and notice has been received that the first shipment on the order of 14 standard length cars will be made from the United States on March 15. The company expects to erect its own power house eventually, but for the present current will be supplied from the Canal Commission's plant at Miraflores.

NOTES OF PROGRESS.

(Continued.)

This will necessitate the installation of two transformers, which have been ordered.

The new electric line will be the second one placed in operation in the city of Panama. On October 22, 1892, an English company, registered in London, was organized. It was named the United Electric Tramways Company, and was capitalized at 30,000 pounds, or \$150,000. It began work of construction in 1893, and in October of that year a part of the line was placed in operation. The rolling equipment consisted of four open and two closed cars, with a capacity of 25 passengers

each. Power was furnished from a small plant, consisting of dynamos built by Siemens & Company, and an engine by Marshall & Sons. From 1893 to 1896, the line was gradually added to, until in the latter year, there was a total length of about 5,000 feet in operation, extending from the old Cuartel, near Las Bovedas, to the present railroad station. Additional lines were projected, but the work was never carried out. In 1894, 115,622 passengers were carried, and in 1896, the number increased to 178,495. During the last two years of operation the company gave service only from 10 to 11 a. m., and from 5 to 10.30 p. m. The enterprise lost money, and the service was suspended in

1901. It is stated that at the time it was built this road was the first electrical line in South America. Up to and including 1896, the company had expended the sum of \$182,656.25. When the Americans came in 1904, the only remaining evidence of this line were the old rails that encumbered the streets, these being removed when paving was begun.

Quarantine Against Plague.

The Sanitary Department, within a few days, will probably withdraw the restrictions it has been imposing on vessels arriving at Colon from Liverpool. Since the report of a case of human plague in Liverpool, in July last, the department has been fumigating vessels from that port, and requiring the presentation of a certificate either from the consul or the health officer of the port, stating that while in port at Liverpool, the vessel in question was fumigated while empty, and that precautions were taken to prevent rats gaining access to it while off the wharves, such as keeping it breasted six feet from the wharves, and provided with rat guards on all hawesers.

The restrictions of the quarantine officers of the Sanitary Department at Colon, relative to vessels coming from Liverpool, have been the subject of much correspondence, and the department, after having on February 1, agreed to waive the fumigation of the vessels from Liverpool, provided proper precautions were taken to prevent rats gaining access to the vessel, by use of rat guards, etc., finally recommended that existing regulations, relative to requiring a certificate from either the health officer of the port, or a consular agent, be not modified until the Bureau of Public Health of the United States saw fit to discontinue the requiring of such a certificate. The rule of this bureau is, that if no infected rats are found in a port within six months, said port may be taken out of the class termed "Suspected of plague infection." The last infected rat at Liverpool was reported on August 30, 1912.

CONCRETE WORK IN THE LOCKS AND SPILLWAYS.

About 98 per cent of the total of 4,446,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on March 1, the amount in place being 4,349,996 cubic yards.

GATUN LOCKS AND SPILLWAY.

Over 96 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on March 1, being 1,970,452 cubic yards, out of a total of 2,043,730. In the spillway of Gatun Dam there had been placed 219,759 cubic yards out of a total of 225,000 cubic yards. A statement of the amount placed each working day of the week ending March 1, and of the total, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.				Large stone.	Total.	SPILLWAY		
	Concrete placed.	Hours worked.	No. of mixer.	Concrete laid.			Hours worked.	No. mixers used.	
	<i>Cu. Yds.</i>			<i>Cu. Yds.</i>	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>			
February 24.....	1,542	24 04	4	.....	1,730	188	6.75	1	.....
February 25.....	1,606	26.76	4	.....	1,725	119	6 00	2	.....
February 26.....	1,572	26.20	4	.....	1,739	167	6 50	2	.....
February 27.....	1,350	22.50	4	.....	1,443	93	6 25	2	.....
February 28.....	1,680	28.00	4	.....	1,854	174	6 00	1	.....
March 1.....	1,632	28.04	.....	.....	1,804	122	7.25	2	.....
Total.....	9,432	155.54	4	.....	10,295	863	38 75	.....	.....
Previously reported.....	.....	.....	.....	.....	1,960,157	218,896	.....	.....	.....
Grand total.....	.....	.....	.....	.....	1,970,452	219,759	.....	.....	.....

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 913,265 cubic yards, having been placed at the close of work on March 1. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed	Hours worked.	No. of mixer.	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.
February 24.....				232	23.50	3			232
February 25.....				184	20.00	3			184
February 26.....				235	22.50	3			235
February 27.....				273	24.50	3			273
February 28.....				223	23.00	3			223
March 1.....				185	16.00	2	22		207
Total				1,332	129.50	2.83	22		1,354
Previously reported.....								4,493	911,911
Grand total.....								4,493	913,265

Chilean Students Visit Canal.

Twenty students from the University of Chile at Santiago, arrived at Balboa on the *Palena* of the Compañía Sud Americana de Vapores, on February 25, on a tour of inspection of the Canal. The party is under the leadership of Prof. Carlos Hoerning, a member of the University faculty, and will remain here for about 18 days. With the arrival of the next steamer from Valparaiso, the party will be joined by Mr. Quesada, president of the Students Federation of Chile.

MIRAFLORES LOCKS AND SPILLWAY.

About 98 per cent of the concrete for the system of two twin locks at Miraflores was in place on March 1, the total amount on that date being 1,466,279 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 1-cubic yard mixers.			Mixed by hand.	Large stone.	Total.	SPILLWAY. AUXILIARY PLANT.						Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers				1-cubic yard mixers.			½-cubic yard mixers			
										Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.						Cu. Yds.
February 24.....	1,404	38 83	8	155	16.00	2	.....	.....	1,559	215	8 00	1	.....	.....	.....	215
February 25.....	1,242	34 67	8	138	14.50	2	.....	.....	1,380	215	8.50	2	.....	.....	.....	215
February 26.....	1,288	33 83	8	175	16.50	2	.....	.....	1,463	154	7.00	2	.....	.....	.....	154
February 27.....	1,242	33.00	8	112	11.50	2	.....	.....	1,354	113	6.00	1	66	6.00	1	179
February 28.....	1,124	31.67	6	77	9.00	1	.....	.....	1,201	102	6.00	1	99	8.00	1	201
March 1.....	1,066	28.83	8	135	12.50	2	.....	.....	1,201	156	6.50	1	54	5.00	1	210
Total.....	7,366	200.83	7.67	792	80.00	1 83	.....	.....	8,158	955	42.00	1.33	219	19.00	.50	1,174
Previously reported.....	.....	.....	.....	.....	.....	.....	.....	.....	3,693	1,458,121	.....	.....	.....	.....	.....	6,795
Grand total.....	.....	.....	.....	.....	.....	.....	.....	.....	3,693	1,466,279	.....	.....	.....	.....	.....	7,969

EXECUTIVE ORDERS.

Artisans Eligible for Transfer to Classified Service.

All artisans, citizens of the United States, who are now or may hereafter be in the service of the Isthmian Canal Commission and who have rendered one year's satisfactory service on the Isthmus of Panama, and who may be recommended, upon discharge, for transfer, may be transferred within three years to corresponding positions in the classified service under the several Executive Departments and independent Government establishments, without examination, subject to the other provisions of the civil service rules.

WM. H. TAFT.

THE WHITE HOUSE,
February 18, 1913.

[No. 1705.]

Exempting Land Known as Las Sabanas from the Provisions of the Executive Order of December 5, 1912.

By virtue of the authority vested in me I hereby order that all that area of land in the Canal Zone known as Las Sabanas be excepted from the provisions of the Executive Order of December 5, 1912, directing the Chairman of the Isthmian Canal Commission to take possession on behalf of the United States of all privately owned lands in the Canal Zone, the said area being bounded on the south by the present limits of the City of Panama, on the southeast by the Pacific Ocean, on the northeast by the boundary line of the Canal Zone from monument 99 for a distance of four thousand seven hundred and forty-four and five-tenths (4,744-5/10) meters to monument marked "F," on the northwest by a line extending from said monument F south 63 degrees 32 minutes west for a distance of two thousand and eight and six-tenths (2,008-6/10) meters to the intersection of said line with the Curundú River, and on the west by the Curundú River from said point of intersection to the point where said river crosses the present boundary line of the City of Panama.

WM. H. TAFT.

THE WHITE HOUSE,
February 18, 1913.

[No. 1704.]

Examinations by Board of Local Inspectors.

Examinations for pilots, masters, mates, engineers, chauffeurs, and navigators of motor boats, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on Wednesday, March 12, 1913, beginning promptly at 8 a. m. All applicants for licenses must procure from the Executive Office, Ancon, forms of application and information respecting the filling out of same, not later than the day previous to the examination. In addition, all persons desiring chauffeurs' licenses must provide themselves with automobiles with which to demonstrate their ability to operate same.

Immigration at Port of Colon During January and February.

According to the figures of the quarantine service, the number of persons who landed at the port of Colon from foreign ports during the month of January was 4,007, consisting of 1,749 cabin, and 2,258 steerage passengers. The number of persons who embarked for foreign ports during the same period was 2,806 consisting of 1,657 cabin, and 1,149 steerage

passengers. The number of persons who landed at Colon from foreign ports during February was 4,530, consisting of 1,661 cabin, and 2,861 steerage passengers. The number of persons who embarked for foreign ports in the same month was 2,870, consisting of 1,764 cabin, and 1,106 steerage passengers. The number of persons who landed over those who embarked was 1,660.

Clearing Trails.

The trail between Mount Hope and Majagual is being cleared on contract by W. D. Henry, whose bid of \$240 for the job was the

lowest among those opened by the Purchasing Agent on February 19. This is at the rate of \$35.54 per mile, the trail being 6.54 miles in length. Contract for the Arraijan-Rio Grande trail, the Arraijan-Cochinito trail, and the Gamboa-Cruces trail was awarded in aggregate to Ruben Arango R., at \$800, which is at the rate of \$51.64 per mile. These costs are lower than those of last year, when 59.54 miles were cleared at an average cost of \$74.88 a mile. The reduction is ascribed to a differential decrease of verdure to be removed in successive clearings.

LABOR FORCE AND QUARTERS IN JANUARY.

The total force at work on the Canal and Panama railroad on January 29, was 37,449. Of this number 26,123 were employed on the canal by the Commission, 4,892 by contractors, and 6,434 by the Panama railroad. The gold force on the Canal work composed almost exclusively of white Americans, was 4,501. The total Government force was as follows:

DEPARTMENT.	SILVER EMPLOYEES.*														Total silver.	Total gold.	Grand total.
	Artisans					European laborers.		West Indian laborers.									
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	6 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.				
Construction and Engineering	4,266	10	10	278	1,045	4,050	3,613	985	124	348	5,314	2,195	12.4	22,450	3,429	25,879	
Civil Administration	148			1	3	26						11		189	349	538	
Sanitation	959				3	3				1	70	242	2	974	450	1,324	
Quartermaster's	574			15	185	10	35	13	3		185	665	113	2,117	175	2,292	
Subsistence	755			2		2								762	52	814	
Disbursements	7														23	30	
Examination of Accounts	15													15	123	138	
Total	6,717	10	10	476	1,189	4,091	3,648	946	156	349	5,572	3,111	229	26,514	4,501	31,015	
Month previous	6,567	10	10	392	1,161	3,485	3,527	742	139	675	5,071	2,876	243	24,905	4,323	29,228	

*All wages specified are in gold. †Includes one at 5 cents. ‡Includes six at 5 cents.

The force report of the Department of Construction and Engineering, including the employees of contractors, for the week ending, January 29, follows:

DIVISION.	SILVER EMPLOYES.*													Total silver.	Total gold.	Grand total.	
	Artisans					European laborers.		West Indian laborers.									
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.				
Chief Engineer	1,689			1,149	582	2,345	1,223	508	25	1	2,930	465	70	9,982	1,463	11,445	
Mechanical	266			6	2	29	74	384	53		953	64	10	1,811	796	2,637	
Atlantic	1,347			4	7	81	260	831	824	367		633	119	8	4,501	582	5,083
Central	970						495	1,513	107	96	347	798	1,547	105	6,126	588	6,714
United States Steel Products Co.															50	87	177
Chicago House Wrecking Company															15	4	19
McClintic Marshall Construction Co.															4,191	505	4,696
Total Government	4,655	10	10	278	1,045	4,060	3,613	983	14	348	5,314	2,195	213	22,450	3,429	25,879	
Month previous	4,507	10	10	255	988	3,448	3,499	733	114	673	4,925	2,014	234	21,089	3,331	24,420	

*All wages specified are in gold. †Includes one at 5 cents. ‡Includes three at 5 cents.

A report of Commission quarters occupied in January, follows:

PLACE.	Gold.			Europeans.			West Indians.		
	Men	Women	Children	Men	Women	Children	Men	Women	Children
Balboa	225	33	35	362			397		
Ancon	512	310	223	18			882		
Corozal	552	86	88	360			425		
Miraflores	22	2	1	618			215		
Pedro Miguel	364	79	79	320			312		
Paraiso	327	83	81	165			187		
Culebra	331	174	164	398			320		
Empire	503	310	290	429			467		
Las Cascadas	172	107	112	43			232		
Bas Obispo	74	44	22	120			162		
Gorgona	727	236	287	74			260		
Gatun	975	208	199	1,250			1,028		
Cristobal	807	285	284	149			1,350		
Toro Point	60	20	29				259		
Porto Bello	60	30	35	81			230		
Total	5,731	2,007	1,929	4,466	172	284	6,726	959	1,349

(1) Includes Sabanas police station, Taboga Island, Culebra Island, Palo Seco, and Naos Island. (2) Includes Europeans and Asiatics. (3) Includes 66 Panamanians. (4) Includes 38 East Indians. (5) Includes 88 Panamanians. (6) Includes Matachin. (7) Includes Colon Hospital. (8) Includes 30 East Indians. (9) Includes five Asiatics. Included in the above also, are 46 families, and 500 bachelors, belonging to the gold force of contractors.

JOINT LAND COMMISSION.

To Adjudicate Claims in Extinction of all Private Titles to Land in the Canal Zone.

Dr. Roland P. Falkner and Dr. L. S. Rowe, appointed by the President to represent the United States in the fourth commission to adjudicate claims in the expropriation of lands in the Canal Zone, arrived on the Isthmus on February 27, and on March 1, met in convening session with the representatives of Panama, Messrs. Federico Boyd and Samuel Lewis. The joint commission was formally organized at this meeting, and on March 3, it was received by the President of Panama and his cabinet. On March 6, the members will make a trip over the Canal Zone in preliminary survey, and the date for the first public hearing of specific claims will be announced shortly.

The extent of the work before the commission cannot be foretold. In conformity with the orders of the President, all privately owned land in the Canal Zone, with the exception of areas in Las Sabanas district, adjacent to the city of Panama is to be bought by the United States. The commission will proceed after the manner of a court of law, advertising time and place of hearing and establishing a docket of claims filed. It will probably be engaged for at least six months. The extinction of all remaining private titles in the Canal Zone entails more comprehensive work than that accomplished by the preceding commissions, whose work was principally in assessing values of separate tracts which were needed, adventitiously, in the Canal construction.

The first commission convened on February 15, 1905, and consisted of Mr. Federico Boyd and Dr. Carlos E. Cooke for Panama, and Mr. T. W. Gaff and Dr. C. A. L. Reed for the United States. The latter were succeeded on May 15, by Dr. H. R. Carter and Mr. E. C. Tobey. Altogether this commission made five awards, aggregating \$55,607.70, for 28,509 hectares of land and improvements.

A second commission, composed of Messrs. Ramón Arias (succeeded by Mr. Constantino Arosemena) and Samuel Lewis for Panama, and Messrs. Montgomery Blair and B. S. Ambler for the United States, adjudicated, in 1907, the half-interest of the Pacific Mail Steamship Company in the islands of Culebra, Flamenco, Naos, and Perico in Panama Bay. The company was paid \$20,000 for its improvements and \$20,000 for the land. The Panama Railroad Company held the other half-interest. This commission also assessed the damage done by a conflagration in the Malambo district of the city of Panama in 1906, which, it was claimed, was started by fumigation directed by the Isthmian Canal Commission. The commission did not fix the responsibility on the United States, and the matter is still pending; a bill providing for \$53,800 in payment for it has been introduced in several sessions of Congress, but has never been passed.

Messrs. Gil Ponce J. and Julio J. Fabrega, for Panama, and Edwin Denby and Everett C. Bumpus, for the United States, composed the third commission, which, in 1908, awarded \$123,980 for 1,963.5 hectares, involving 13 claims. The chairman, Mr. Denby, was chosen umpire for several cases on which the pre-

ceding commission had not been able to agree. In expropriation proceedings, reported in THE CANAL RECORD of August 12, 1908, he awarded \$61,000.

More Paper Currency.

For sanitary and other reasons, payments on the Canal have for several years past been made in gold coin, but it has been the practice of the Disbursing Department to use one dollar bills in making payments to employees entering upon annual leave or terminating service, for that portion of the amount due amounting to less than \$5, in order not to deplete the Panama silver, and also for the convenience of the employee.

It has been decided to extend this courtesy to the tourists, and upon request of the Sub-sistence Officer, the Disbursing Officer has taken steps to provide the necessary currency for such purposes, as, on account of the greatly increased travel, not only might it be inconvenient for tourists to receive Panama silver for amounts less than \$5, but the tendency would be to deplete the silver supply, all of which is needed in the Republic of Panama.

Civil Service Examinations.

Examinations for the following-named positions are scheduled to be held, probably on April, 13: Agricultural inspector, Philippine Service; assistant observer, Weather Bureau; cadet engineer, cadet officer, Lighthouse Service; civil engineer and draftsman, nonapportioned departmental service; civil engineer and superintendent of construction, Quartermaster Corps; mechanical draftsman, topographic draftsman, Isthmian Canal Service; engineer, Indian Service (steam engineering, electrical engineering, heating, refrigeration, gas and gasoline engines, hydraulics); farmer, Indian Service; junior engineer (civil), junior engineer (mechanical or electrical), Engineer Department at Large; junior engineer (mining), Bureau of Mines; scientific assistant, Department of Agriculture; surveyor, Philippine Service; teacher, Indian Service; trained nurse, Indian, Isthmian Canal, and Philippine services; wireman, nonapportioned departmental service.

Women will be admitted to the examinations for teacher, scientific assistant, and trained nurse, and women only will be admitted to examination for trained nurse, Philippine Service.

Note—This office has been advised that the following subjects with relative weights shown, will replace those given in Section 108 of the Manual of Examinations for mechanical draftsman, Isthmian Canal Service; 1. Machine design (including arithmetic, algebra and quadratics, geometry, mensuration, logarithms, use of tables, elementary problems in mechanics, use of slide rule, materials used in machine construction, and practical calculations involving the interpretation of formulas and the correct working out of results in special cases), 30; 2. Drafting (involving competent knowledge of machine construction and the ability to draw neatly to scale), 35; 3. Training, experience, and fitness, 35.

A limited supply has been received of a special announcement of the examination for scientific assistant, and, until the supply is exhausted, copies will be furnished upon request.

Applications for the above-named examinations will not be received in this office after

March 22; this date will be changed if necessary. Applications should be secured from and filed with this office. In requesting information the kind of examination desired should be mentioned.

The examinations will probably be held at Empire, in the Commission clubhouse, but the place and date of examination should be omitted in applications.

In answering questions as to residence applicants must show such residence in a State, and county therein, of the United States, up to the time of filing application.

ISTHMIAN CIVIL SERVICE BOARD.

Culebra, C. Z., March 1, 1913.

Isthmian Geological Researches.

Dr. George F. Becker, Chief of the Division of Chemical and Physical Research of the United States Geological Survey is on the Isthmus to obtain a mathematical analysis of the rock deformations that occur in Culebra Cut, as a part of the slide phenomena. This analysis is expected to contribute, not only to the science of geophysics, or the physics of the earth's crust, but to geology in general.

Mr. D. F. MacDonald, the Canal Commission geologist, has furnished Dr. Henry S. Washington, of the Carnegie Institution at Washington, with about a dozen detailed analyses of the typical rocks of the Isthmian region, as well as microscopic and broader studies of them, which is believed to be the most exhaustive study of Isthmian, or in fact, of Central American rocks, that has ever been made. Dr. Washington intends to use this information in a publication, by the Carnegie Institution, of detailed analyses of the chief rock units which compose the earth's crust, a work which is expected to be of fundamental importance to geologists, and to those who are dealing with the problems of geophysics and geochemistry.

Radiotelegraph Stations.

Forces of the United States Marine Corps began the erection of a wireless telegraph station at Balboa on February 10. One of the smokestacks at the Isthmian Canal Commission electric plant will be used as a mast for the flat-topped antennae, and the ground wires will pass into the storage pond for water used in cooling the air compressor at the plant. The radio apparatus to be installed will use a 25-cycle, 3-phase current and vibrate a wave length of 600 meters for communication with ships within a radius of 500 miles. The outfit was purchased from the government of the Republic of Panama, which had projected its installation at the National Palace, in the city of Panama, but abandoned the undertaking on account of the activities of the United States Government.

In accordance with the authority of Congress, the large wireless station at Colon was opened to commercial business during the month of January. Messages are transmitted for eight cents a word to ships two and three days out from port, delivery not being guaranteed to vessels farther north than Kingston.

Pardon for Silvers and Petersen.

Charles Silvers and F. P. Petersen have been granted a pardon, effective March 1, for the unserved part of a term of two and a half years in Culebra penitentiary, which they began on November 8, 1911, on conviction on five counts as accessories to embezzlement from the Isthmian Canal Commission.

REMOVAL OF GORGONA.

Dismantling of Family Houses to be Begun First—Applications for Married Quarters Restricted.

The Chairman and Chief Engineer, under date of March 3, approved the recommendations of the Acting Chief Quartermaster relative to dismantling all of the American built married and bachelor quarters at Gorgona. According to the present schedule, the water in Gatun Lake is expected to rise to a height that will inundate the site of Gorgona shops some time in September of this year. This allows but little over five months in which to remove the quarters, miscellaneous buildings, and shops. The work of the shops, prior to their abandonment, will probably be divided between the shops at Empire, and the marine shops at Cristobal, this arrangement to continue in effect until the completion of the permanent shop buildings at Balboa. Material in the storehouse will be transferred to the storehouse at Empire, and to the Mount Hope Depot.

The work of demolishing the married quarters will be begun at once, or as soon as arrangements can be made for the transfer of the present occupants to other points. Some of the vacated buildings will be taken to Corozal, and reerected there; and the remainder will be used at Balboa. It is expected that the dismantling of the bachelor quarters at Gorgona will be begun as soon as possible after August 1, the occupants of which will be given new assignments at the point most convenient to their work. At Empire, there are several nonhousekeeping family quarters, which will be converted into bachelor quarters as soon as they can be vacated. There are upward of 80 American built buildings to be taken down at Gorgona, including the following: Nine Type 1, two-family houses; 10 Type 5 bachelor quarters, converted into married quarters; one Type 7 two-family house; 23 Type 14 four-family houses; three Type 15 one-family houses; one Type 17 one-family house; two miscellaneous houses, without type numbers, used for married quarters; eight Type 18 bachelor quarters; three Type 5 bachelor quarters; one Type 21 officials' residence, and the usual public buildings common to the Canal Zone towns. In addition, there are 27 French cottages, used as married quarters; 12 two-family French houses, and one four-family French house. The French buildings will not be taken down for the present, and the public buildings, such as postoffice, police station, fire station, hospital, schoolhouses, clubhouse, etc., will be left until later. The value of the privately owned buildings in the native part of Gorgona will be adjudicated by the Joint Land Commission, and no decision will be arrived at as to their disposition until the commissioners have made their report.

Assignments will be stopped at Gorgona at once. On and after March 31, there will be no further assignments of married quarters at Bas Obispo, Las Cascadas, Empire, and Culebra, with the possible exception of the few on the No. 1 list of the applications for married quarters on file February 28. All applications on the No. 2 list will be cancelled.

On January 31, when this list was last compiled, there were 280 applicants for married quarters on file on the No. 2 list in the villages of Bas Obispo, Las Cascadas, Empire, and Culebra. It is planned to hold the married quarters at those points, as fast as they become vacated, for the married employes, whom it will be necessary to move from Gorgona.

PERSONAL

Lieut.-Col. Chester Harding, U. S. A., assistant division engineer of the Atlantic Division, resigned his position with the Isthmian Canal Commission, effective February 27, and, accompanied by Mrs. Harding, and their daughter, Miss Katherine Harding, sailed for the United States on the *Allianca*, which left Cristobal on Friday, February 28. Effective February 28, 1913, he was appointed the engineer member of the Board of Commissioners, which governs the District of Columbia, succeeding Lieut.-Col. William V. Judson, Corps of Engineers, U. S. A. Lieutenant-Colonel Harding arrived on the Isthmus on August 2, 1907, and, until the creation of the Atlantic Division on July 1, 1908, was division engineer of the old Division of Gatun Lock and Dam Construction. When the Atlantic Division was organized, he became the assistant division engineer in local charge of the designing force of the Atlantic Division, with headquarters at Gatun. With the transfer of Maj. Edgar Jadwin to the United States on June 15, 1911, he was placed in local charge of the Atlantic entrance and Toro Point breakwater work, with headquarters at Dock 13, Cristobal.

Mr. Edward J. Williams returned on Thursday, February 27, on the *Cristobal*, from his annual leave of absence, a part of which he spent in England and France. His wife and children, who accompanied him to Europe, remained in Paris.

Mr. H. A. A. Smith, accompanied by Mrs. Smith, returned from leave of absence on the *Cristobal*, which docked on Thursday, February 27.

Changes in Transisthmian Cables.

The Central and South American Telegraph Company has been granted permission by the Municipal Council of Panama to place its cables underground, in the traverse from its Pacific landing station at Punta Mala to the commercial office on Central Avenue, at the corner of A street. The three strands are now carried like telephone cables, on iron poles, skirting the beach for about a mile and a half. In times of storm they have suffered, and it has happened that hunters have shot holes in the large cables. Permission has been granted by the Isthmian Canal Commission to lay the conduit below the pavements of the streets of the city, which are controlled through the Department of Public Works, by virtue of its having paved the streets.

The only streets affected by this proposed work are Eleventh and A streets, for a distance of about three hundred yards in all, but the permission covers future conduit work on the part of the company, should it desire to place underground the cables from its office to the Panama railroad station, connecting with Colon. From the station to Colon, it is already underground—the longest subterranean cable in the world, 49 miles in

length. As much as possible this cable follows the relocated line of the Panama railroad, and was laid from flat cars. A part of it crosses the Gatun Lake area, and is 50 feet under water. This "amphibious" cable has four insulated cores, and, on account of high inductance, due to the electric power plants along the line, it is necessary to use two cores for each circuit, instead of grounding a single core. The Canal construction has subjected it to many accidents, in slides, dumps, excavation and fires, and the company's repair gang has been kept busy, with from 15 to 40 men, in making repairs and in moving the line out of danger.

A Rivet-Driving Record.

Three gangs employed on the spillway gates at Miraflores drove a total of 22,328 rivets during the month of February, an average of 372 rivets a gang for each working day of eight hours. This is believed to have established a new local rivet-driving record. The maximum day's work for all three gangs was 2,137 rivets, and the maximum day's work for one gang was 1,237. Out of the latter number, 167 rivets were ordered cut out and re-driven, leaving a net total of 1,070 for the day. There is one riveter to each gang, and the workman who made the best record for his gang for one day was a West Indian named Gerald Goodrich. The force was in charge of Superintendent Fred Hutzley.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending March 1:

DATE.	Hours worked.	Cubic yards.
February 24.....	10.00	3,292
February 25.....	9.20	3,040
February 26.....	10.20	3,648
February 27.....	10.25	2,625
February 28.....	10.20	3,833
March 1.....	10.20	3,330
Total.....	60.45	19,768

Balboa Sand Service.

A report of sand shipped from Balboa during February, follows:

DESTINATION.	Number cars.	Cubic yards.
Atlantic Division.....	19	471
Central Division.....	30	450
Mechanical Division.....	2	50
Fifth Division (C. E.).....	1,440	28,496
First Division (C. E.).....	2	30
Civil Administration.....	1	25
Quartermaster's Department.....	1	25
Panama Railroad Company.....	10	250
Fortifications.....	*319	7,365
Private.....	4	100
Total.....	1,828	37,262

*Also three barges.

Record for Ditching Machine.

Panama railroad ditcher, No. 1, working at the stock pile of river gravel across the Chagres from Gamboa, on February 21, loaded 1,203 cubic yards of gravel in seven hours and 38 minutes. This exceeds former high runs of the same machine, and is believed to set a record for $\frac{3}{4}$ -yard clamshell cranes. The engineer was E. Richard.

Mr. G. M. Guerin has been appointed Acting Vice-Consul of Norway in the city of Panama, vice Mr. Edward H. Morrice, resigned.

SOCIAL LIFE OF THE ZONE.

Church Notes.

A series of revival meetings is in progress at the seawall Methodist Episcopal Church, Panama, conducted by the Rev. Hugh Taylor of Knoxville, Tenn. The mission began with an evening service on Tuesday, February 25, and will close on Wednesday, March 12. The Rev. Mr. Taylor is accompanied by Mr. James Reid, cornetist and evangelistic singer; and by Mr. de Russ, a Spanish preacher from San José, Costa Rica. The agent of the American Bible Society for Central America, the Rev. James Hayter, is making his second visit to the Isthmus in connection with this mission. The services, which begin each evening at 7.30 o'clock, are conducted both in Spanish and English. The pastor of the church, the Rev. Harry Compton, conducts the Spanish service, and the Rev. Mr. Taylor, the English.

On Monday evening, February 17, the members of the original ladies' auxiliary to the Gatun Christian League held a rally at the home of the Rev. Stephen and Mrs. Witt, the occasion being a farewell to those of the charter members who are leaving the Isthmus. This auxiliary was organized in 1908, and was disbanded about six months ago. Each of the original members was presented with a souvenir of her work in the auxiliary.

Miscellaneous.

The missionary library of the Gatun study circle has been received, and the books were placed in circulation among the members on February 26. The next meeting of the circle will be held at the home of Mrs. Witt on Friday afternoon, March 7.

The headquarters of Orchid Chapter, No. 1, Order of the Eastern Star, have been moved from Gorgona to Empire. The first meeting at the new place will be held on Saturday evening, March 8. Meetings will be held in the Commission lodge hall, Empire, on the second Saturday evening in each month.

A musical entertainment entitled "The District School" will be given at the Gorgona club house on Monday evening, March 10.

For the Sunday evening service in the clubhouse, the following program has been prepared: March 9, an illustrated lecture on Cuba; March 16, an illustrated lecture on the life of Moses, with special music; on Easter Sunday, March 23, a sacred cantata.

The monthly dance of the Cristobal Dancing Club will be held on Saturday evening, March 8, at the Commission clubhouse. Membership cards or invitations must be presented at entrance of hall.

Public Health Lectures.

On Thursday evening, February 27, a public health lecture was given in the convensorium, corner of Cash and D streets, Colon, the subject being "Tuberculosis, its prevention, treatment and cure." At the close, the speaker, Dr. M. E. Connor, opened a question and discussion class. The lecture was illustrated with lantern slides, a number of new pictures being shown in addition to those already exhibited in connection with these public talks. The series of lectures will be under the direction of, and will be financed by, the philanthropy department of the Cristobal Woman's Club. There is no set schedule, but the lectures will be announced, as arranged for, from time to time. This begins the third series of health lectures to be

given under the auspices of the Cristobal Woman's Club, the first two series having been given in 1910-1912. It is estimated that the total attendance at the ten lectures was more than 2,000.

Obituary.

Charles E. Evans, an employe of the Fifth Division at Corozal, died in Colon hospital on February 16. He was 33 years of age, married, and had been on the Isthmus four months. He is survived by his wife, living at Massillon, Ohio.

Tug Service to Porto Bello and Toro Point.

Following is a revised schedule of Atlantic Division tugs in the service between Dock 13 and Porto Bello, and Dock 13 and Toro Point.

PORTO BELLO.

Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays.—Leave Dock 13 at 5 p. m., arrive Porto Bello 10 p. m., returning, leave Porto Bello 11 p. m., arrive Dock 13 at 3 a. m.

Saturdays.—Leave Dock 13 at 9 a. m., arrive Porto Bello 11 a. m., returning, leave Porto Bello 2 p. m., arrive pier No. 4, Colon, 4 p. m.

Every Saturday, except the first Saturday after the 20th of each month. *Sailing No. 1.*—Leave Dock 13 at 2 p. m., arrive Porto Bello 4 p. m., returning, leave Porto Bello at 4.30 p. m., arrive at pier No. 4, Colon, 6.30 p. m. *Sailing No. 2.*—Leave Dock 13 at 6 p. m., arrive Porto Bello 11 p. m., returning, leave Porto Bello 12 midnight, arrive Dock 13 at 4 a. m.

Every Sunday.—Leave Dock 13, 7 p. m., arrive Porto Bello 9 p. m., leave Porto Bello 9 p. m., arrive Dock 13, 11 p. m.

Sundays, immediately following the 20th of each month. *ONLY.*—Leave Porto Bello 6 a. m., arrive Dock 13 at 8 a. m.

TORO POINT.

Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays. *Sailing No. 1.*—Leave Dock 13 at 6.30 a. m., arrive Toro Point 7 a. m., returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. *Sailing No. 2.*—Leave Dock 13 at 5 p. m., arrive Toro Point 5.30 p. m.

Special, Wednesdays, ONLY.—Leave Dock 13 at 12 noon, arrive Toro Point 12.30 p. m., returning, leave Toro Point 12.30 p. m., arrive Dock 13 at 1 p. m.

Saturdays. *Sailing No. 1.*—Leave Dock 13 at 6.30 a. m., arrive Toro Point 7 a. m., returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. *Sailing No. 2.*—Leave Dock 13 at 4.30 p. m., arrive Toro Point 5 p. m., returning, leave Toro Point 5.30 p. m., arrive Dock 13 at 6 p. m.

Sundays. *Sailing No. 1.*—Leave Dock 13 at 9.30 a. m., arrive Toro Point 10 a. m.; returning, leave Toro Point at 10.30 a. m., arrive Dock 13 at 11 a. m. *Sailing No. 2.*—Leave Dock 13 at 4.30 p. m., arrive Toro Point 5 p. m., returning, leave Toro Point 5 p. m., arrive Dock 13 at 5.30 p. m.

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday, and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

FOUND.—On tug *Bohio*, Sunday, March 2, on trip to Toro Point, ladies' purse, containing 75 cents, United States currency. Owner can have same by applying to Dock 13 office.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Commissary Cold Storage.

No material changes have been made in the prices of cold storage commodities sold at the Commissary stores since the last publication of the price list.

Rainfall from February 1 to 28, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	.08	11-18	.22
Balboa.....	.09	22	.19
*Miraflores.....	1.09	19	2.49
Pedro Miguel.....	.03	19-22	.07
Rio Grande.....	.22	18	.43
<i>Central Section—</i>			
Culebra.....	.46	18	.78
*Camacho.....	.28	18	.44
Empire.....	.63	18	.79
Gamboa.....	.39	18	.68
*Juan Mina.....	.36	17	.94
Alhajuela.....	.19	17	.22
*El Vigia.....	.52	20	.86
*Gorgona.....	.17	18	.30
*Frijoles.....	2.29	18	3.03
*Trinidad.....	.79	18	1.80
*Monte Lirio.....	1.10	17	2.52
<i>Atlantic Section—</i>			
Gatun.....	1.42	17	2.92
*Brazos Brook.....	2.21	17	4.20
Colon.....	.72	17	1.75
Porto Bello.....	.91	1	2.03

*Standard rain gauge—readings at 5 p. m. daily. Automatic rain gauge at unstarred stations—values midnight to midnight.

February Rainfall for Three Years.

STATIONS.	1911	1912	1913	Station Av.	Years of record	Rainy days 1913
<i>Pacific Section—</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>		
Ancon.....	2.75	.08	.22	.81	15	4
Balboa.....	3.22	.18	.19	.54	14	3
*Miraflores.....	2.43	.34	2.49	1.82	5	5
Pedro Miguel.....	1.40	.22	.07	.91	6	3
Rio Grande.....	.91	.33	.43	.65	9	6
<i>Central Section—</i>						
Culebra.....	.74	.33	.78	.57	23	6
*Camacho.....	.69	.65	.44	.76	7	5
Empire.....	.55	.34	.79	.58	8	6
Gamboa.....	.71	1.11	.68	.85	28	5
Juan Mina.....	1.39	.90	.94	1.08	3	6
Alhajuela.....	2.29	.33	.22	.75	14	3
*El Vigia.....	3.19	.62	.86	2.39	5	4
*Gorgona.....	1.99	.35	.30	.80	9	4
*Frijoles.....		3.01	3.03	3.02	2	7
Trinidad.....	2.00	1.15	1.80	2.68	6	13
Monte Lirio.....	2.41	3.32	2.52	4.04	6	7
<i>Atlantic Section—</i>						
Gatun.....	2.19	2.38	2.92	2.46	9	11
Brazos Brook.....	2.03	2.26	4.20	2.57	7	10
Colon.....	1.81	1.81	1.75	1.48	43	10
Porto Bello.....	6.90	1.64	2.03	4.13	6	10

WEATHER CONDITIONS, CANAL ZONE, FEBRUARY, 1913.

Rainfall on the Isthmus during the month of February was generally deficient, except along the Atlantic coast. The monthly totals ranged from .07 inch at Pedro Miguel to 4.20 inches at Brazos Brook.

Approximately normal conditions of temperature, humidity, and atmospheric pressure prevailed.

There was a general deficiency in wind movement over the Isthmus, and the average cloudiness was everywhere below normal.

The decrease in night foginess continued with the advance of the dry season. Of the fogs observed, 73 per cent were dissipated by 6.30 a. m., 95 per cent by 7.30 a. m., and 100 per cent by 8.30 a. m.

The following table summarizes the weather conditions for the month:

STATIONS.	Press're (reduc'd to mean of 24 hours.)	Temperature						Precipitation				Wind			
		Mean.	Maximum.	Date.	Minimum.	Date.	Mean relative humidity.	Total inches.	Station aver- age.	Number of rainy days.	Total move- ment (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Colon.	29.908	80.0	86	Feb. 27	71	Feb. 4	78	1.75	1.48	10	8,886	N.	32	N. E.	Feb. 10
Culebra.	29.887	78.0	90	Feb. 21	66	Feb. 4	86	0.78	0.57	6	6,513	N. W.	28	N. W.	Feb. 10
Ancon.	29.870	79.9	93	Feb. 13	66	Feb. 22	83	0.22	0.81	4	6,247	N. W.	26	N.	Feb. 10

OFFICIAL CIRCULARS.

March 21 (Good Friday, a Holiday.

CULEBRA, C. Z., March 4, 1913.

CIRCULAR No. 478:

So far as consistent with the transaction of public business, Friday, March 21 (Good Friday,) will be observed as a holiday in the Canal Zone.

Good Friday is not included in the list of holidays for which gratuity pay is allowed, and pay for services performed on that day will be calculated the same as for Sundays.

Holy Thursday will be considered an ordinary working day and payment made accordingly.

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Eye and Ear Examination of Railway Employees.

CULEBRA, C. Z., February 27, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

The examinations of railway employees to determine visual acuity, color perception, and hearing, as prescribed in circular of the 11th instant, will be made by the eye and ear clinics of Ancon and Colon Hospitals.

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Shipment of Employees' Personal Effects.

CULEBRA, C. Z., March 3, 1913.

ALL CONCERNED:

Until further notice, the household and personal effects of employees leaving the service, in excess of the regular baggage allowance on first and second-class tickets, will be accepted for shipment as freight from any station of the Panama railroad to Colon or Panama on I. C. C. billing, without expense to the employee.

GEO. W. GOETHALS, Chairman.

Personal Injury Compensation.

CULEBRA, C. Z., March 3, 1913.

CIRCULAR No. 235-G:

On February 26 the President signed an Executive Order, effective March 1, as authorized by Section 5 of the Panama Canal Act, approved August 24, 1912, providing "A method for the determination and adjustment of all claims arising out of personal injuries to employees thereafter occurring while directly engaged in actual work in connection with the construction, maintenance, operation, or sanitation of the Canal, or of the Panama railroad, or of any auxiliary canals, locks, or other works necessary and convenient for the construction, maintenance, operation, or sanitation of the Canal, whether such injuries result in death or not."

The Act also provides that the claims to the extent they are allowed shall be paid out of the moneys appropriated for that purpose, or out of the funds of the Panama Railroad Company, as the case may require, and that the Injury Compensation Act of May 30, 1908, and the act under which meritorious sick leave is now allowed "Shall not apply to personal injuries thereafter received and claims for which are subject to determination and adjustment" as prescribed by the President.

Compensation is payable in case of all injuries to employees whether resulting in death or not, occurring while the employees are directly engaged in actual work, except when the injury is caused by the employee's intention to bring about the injury or death of himself or another, or by his intoxication.

No payment whatever is made at any time for the first five days of disability, except that employees entitled to sick leave may be granted the same.

In determining the amount payable under the terms of the Order the maximum monthly pay of any employee is limited to \$200. The maximum rate at which compensation on account of injury is payable is 50 per cent of the monthly pay, so that no employee would receive more than \$100 per month during the period of his disability.

In cases of total disability, an employee will receive a monthly compensation of 50 per cent of his monthly pay for a period not exceeding six years, and thereafter during the continuance of the disability a monthly compensation equal to not more than 40 per cent and not less than 25 per cent of his monthly pay.

In cases of partial disability, an employee will receive 50 per cent of the difference between his monthly pay and his wage-earning capacity during the period of disability not exceeding six years, and after the expiration of six years a monthly compensation equal to not more than 40 per cent and not less than 25 per cent.

Employees are entitled to medical, surgical, and hospital service, and, in the discretion of the Chairman, may be granted transportation to their homes, if the Chairman is of the opinion that it is not desirable to continue the injured employee in the service.

The regulations provide for increased compensation in case of death, 35 per cent of the monthly pay of a deceased employee being paid to a dependent widow for

a period of six years from date of death, except in case of her death or her remarriage. Ten per cent additional payable for each child, not, however, to exceed a total of 50 per cent for the widow and children.

If the employee left no widow, 25 per cent is payable for one child, and 10 per cent additional for each additional child not exceeding a total of 50 per cent until they reach the age of 18 years, or become capable of self-support.

One dependent parent may be paid not exceeding 25 per cent. If both parents are dependent, not exceeding 20 per cent is payable to each.

Provision is also made for paying a percentage to wholly dependent brothers, sisters, children, grandchildren, or grandparents, if there is no widow, widower, child, or dependent parents.

Until the Isthmian Canal Commission is discontinued as authorized by the Panama Canal Act, the Order provides that "Compensation shall be paid in a lump sum in all cases unless the Chairman of the Isthmian Canal Commission in any case determines that payment in installments for part or all of the period during which compensation is payable is for the best interests of the United States, or of the Panama Railroad Company, or of the beneficiary."

The Order provides that the liability of the United States and the Panama Railroad Company shall be discharged by the payment of a lump sum equal to two-thirds of all future payments of compensation, and that the probability of the beneficiary's death before expiration of the period during which he is entitled to compensation shall be determined according to the American table of mortality.

If an injury, or death, is caused under such circumstances that there is a legal liability against a third party, or in the case of a Commission employee against the Panama Railroad Company, the employee must assign his right of action, and, in the case of the Panama railroad, must release the railroad company from any liability on account of such injury or death before receiving final payment.

The Order requires the making of reports and the filing of claims similar to the requirements at the present time.

The Order will be published in full with instructions in regard to the procedure thereunder as soon as an authenticated copy is received.

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Circular No. 45 Cancelled.

PANAMA RAILROAD COMPANY,

COLON, R. P., February 25, 1913.

CIRCULAR No. 30:

All Concerned:—Circular No. 45, dated February 27, 1912, in regard to sightseeing excursion train not being operated on holidays, is hereby cancelled.

J. A. SMITH, General Superintendent.

Prices for Gravel.

PANAMA RAILROAD COMPANY,

COLON, R. P., March 1, 1913.

CIRCULAR No. 31:

All Concerned: Effective February 15, 1913, the price of gravel sold to private parties will be \$1.60 per cubic yard. Gravel will be charged into the work of the Engineering Department at the rate of 75 cents per cubic yard, and bills against the Commission, for gravel used on the relocated line, will also be rendered at the rate of 75 cents per cubic yard.

J. A. SMITH, General Superintendent.

Movement of Trains—Miraflores Tunnel.

PANAMA RAILROAD COMPANY,

COLON, R. P., March 3, 1913.

GENERAL ORDER, G. S. No. 5:

All Concerned: A staff system will soon be placed in service between North Cabin and South Cabin to handle traffic through the Miraflores tunnel. The date will be given in a later bulletin.

The staff is a piece of metal enclosed within a rubber holder for convenience in handling. Its possession by the engineman or conductor on the forward end of a train, gives the right to proceed through the staff system territory only, and supersedes existing orders or time table authority between North Cabin and South Cabin.

The staff must be delivered by the signalman to the forward end of all trains entering the tunnel, and the train crew must throw the staff on the balcony of the opposite cabin when passing that building. A staff must not be given to any train by the crew of another train, or by a signalman without first putting same in the staff instrument and again removing it.

The signalman on duty at North Cabin will have general supervision over traffic movement through this territory.

The book of rules will govern all movements through the interlocking plants at either end of the tunnel.

Signalmen will immediately place signal and master levers normal as soon as rear of train has passed home or dwarf signals when entering the tunnel.

In case of failure of the staff instruments, trains will be brought up to the tunnel under a hand signal, given with a yellow flag, or a yellow lantern, and there given instructions over the signature of the signalman that the staff system is out of order and that they may proceed.

J. A. SMITH,

General Superintendent.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon during the week ending March 1:

Carrillo, February 23, from New York, with 30 barrels rosin, 215 cases soap, 40 kegs washers, 60 carboys acid, for stock; 10 cases electrical material, 116 bundles steel bars, for Panama Railroad Company; 563 bundles steel bars, for Second Division; 17 cases electrical material, 21 reels electric cable; 28 cases gate machinery, for First Division.

Prinz Eitel Friedrich, February 24, from New York, with six barrels galvanized unions, for stock.

Santa Maria, February 26, from New York, with 51 cases electrical material, 12 reels electric cable, 25 cases fender castings, six bundles steel bars, for First Division; 10 cases electrical material, for Mechanical Division; 125 bundles steel bars, for Second Division; six pieces castings, 18 barrels journal bearings, for Mechanical Division; 85 kegs nails, 16 bales packing, 500 kegs track spikes, 32 kegs washers, for stock.

Abangarez, February 26, from New Orleans, with 10 pieces steamshovel chain, 480 sacks dairy feed, 939 bales prairie hay, 150 cases fire brick, 938 pieces cross-ties, 3,879 pieces yellow pine lumber, 178 pieces piling, for stock; 149 pieces white oak lumber, 321 pieces cypress lumber, 19,336 pieces yellow pine lumber, for Mechanical Division.

Carlago, February 27, from New Orleans, with 2,269 bales hay, five cases paint, 10 rolls cotton duck, 1,408 pieces yellow pine lumber, 400 pieces cross-ties, 33 pieces piling, for stock.

Cristobal, February 27, from New York, with 154,000 bags cement, for Fifth and Atlantic Divisions; 12 pieces steel plates, for Sixth Division; 12 crates generators, for Central Division; eight reels electric cable, 13 cases castings, for First Division; 40 coils wire, 898 pieces iron pipe, 12 cases hardware, for stock.

Colon, February 27, from New York, with 10 barrels fire clay, 22 cases wire, 163 kegs steel pins, 83 cases incandescent lamps, 135 barrels sand, for Mechanical Division; 636 crates tile slabs, 108 packages signal material, for Panama Railroad Company; 250 cases glassware, 60 bags poultry feed, for Sanitary Department; 287 kegs nuts and pins, 50 pieces steel channels, 17 barrels pipe-fittings, 50 barrels flour, 23 cases lantern globes, 80 bales waste, 400 cases linseed oil, 125 cases babbitt metal, 30 cases polish, 1,508 pieces iron pipe, 163 kegs steel pins, 18 cases envelopes, for stock; and a miscellaneous cargo, the whole consisting of 4,720 packages, weighing 640 tons.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, March 1, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	Vigia.	STATIONS.			
		Alhajuela	Cambalé	Cedra	Lake.
Sun., February 23.....	125.8	92.2	48.5	48.5	
Mon., February 24.....	125.8	92.0	48.4	48.4	
Tues., February 25.....	125.8	92.0	48.3	48.3	
Wed., February 26.....	125.8	92.0	48.1	48.1	
Thurs., February 27.....	125.8	91.9	48.0	48.0	
Fri., February 28.....	125.8	91.8	47.9	47.9	
Sat., March 1.....	125.7	91.8	48.0	47.8	
Height of low water to nearest foot		125.0	91.0	44.0	

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending March 15, 1913. (75th meridian time):

DATE.	Low		High	
	A.M.	P.M.	A.M.	P.M.
March 9.....	4.47	10.53	4.58	11.13
March 10.....	5.15	11.25	5.25	11.48
March 11.....	5.43	11.55	5.55	
March 12.....	12.17	6.12	12.27	6.25
March 13.....	12.50	6.45	1.00	7.01
March 14.....	1.30	7.24	1.40	7.40
March 15.....	2.15	8.10	2.28	8.30

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

Schedule of moving picture dates, week March 10 to 15: Monday, Gatun; Tuesday, Culebra; Wednesday, Gorgona; Thursday, Empire; Friday, Corozal; Saturday, Cristobal; Friday, Porto Bello.

Return engagements of the Edith Harris Scott Concert Company are, as follows: Monday, March 10, Empire; Tuesday, Gorgona; Wednesday, Corozal; Thursday, Gatun; Friday, Cristobal; Monday, March 17, Culebra.

Representatives of the various clubhouses met at Cristobal on Saturday night, March 1, and organized the Isthmian Duckpin League for 1913. Mr. Gustavson, Empire, was elected president; Mr. Pinney, Empire, secretary; and Mr. Weston, Cristobal, official scorer. The series will begin March 8, and will continue for 10 weeks. After the meeting, the representatives participated in a two-man team bowling contest.

CULEBRA.

High scores for the week in duckpins were, as follows: Warner, Jr., 106, 119; Palmer, 102, 101; Kersey, 102; Grossberg, 114; Case, 104; Brown, 103; Durand, 120; Dougherty, 106; Kiernan, 103. Brown won the prize for high score during February with 130, and E. P. Case took second prize with a score of 125.

EMPIRE.

The opening game of the Isthmian duckpin tournament will be held at Empire on Saturday evening, March 8, when Culebra will bowl the Empire team.

The boys' bowling tournament has been completed with the following results: High score, Hepler, 109; high two-man team, Hepler and Engelke, score 519; high average, Hepler, average 83; second high average, Engelke, average 80; third high average, Payne, average 80. Silver and bronze medals were given for prizes.

Three hundred people attended the opening concert given by the Edith Harris Scott Concert Company on Friday evening, February 28.

All those wishing to enter a local tenpin bowling tournament should do so on or before March 10. There are twenty entries to date.

The February handicap pool tournament was won by Mr. Donnelly, among sixteen entries.

GORGONA.

The attendance at the gymnasium classes is increasing. These classes meet on Tuesdays and Thursdays.

The Gorgona indoor baseball team went to Camp Elliott on Saturday evening, and won by the score of 28 to 20. Ridge, Hennen, Robitoy, Morrison, Johnson, Christensen, Emery, Edwall, and Lauden were the men that represented Gorgona. The score was a tie until the tenth inning.

A special benefit program will be held on Saturday evening at the clubhouse. Every one is invited.

On Sunday evening, March 9, beginning at seven, there will be a special program, when a lecture on Cuba with illustrated slides, will be given. There will be special music.

Gorgona defeated Gatun in a bowling contest on Saturday evening. Scores follow:

Gatun				Gorgona.			
Harper.....	87	87	79	Dunlap.....	69	94	98
Wulff.....	81	66	77	Denst.....	86	104	89
Carson.....	92	86	82	Seebt.....	87	89	83
Campbell.....	63			Roper.....	81	81	
Gibson.....	79	80	76	King.....	90	83	86
Gebhardt.....		79	92	Ruchte.....			85
Totals.....	492	498	496		413	451	441

High scores for the week in bowling: Denst, 102, 105, 101, 103, 102, 104, Stewart, 103, Lowe, 102; Ruchte, 102, 101, 102; Nowick, 107.

High individual scores for local tournament: Davis, 321, Roper, 307; King, 304; Single—Davis, 125; Stewart, 115; Stoehr, 114. Teams—Davis and Keppler, 612; Nowick and Roper, 597; Sims and Roper, 595.

GATUN.

The Gatun Clubhouse celebrated its third anniversary by a "smoker" on Tuesday evening, March 4. Formal exercises will be held on Wednesday evening, March 5. The programs follow:

Part 1—Selection, Tenth Infantry; "Just a word," W. C. Gayer, vice chairman, executive council; Irish ballads, G. C. Fitzgerald; piano solo, John McMahon; negro songs, Geo. Stokes; marching song, Y. M. C. A. glee club; Scotch songs, Archie Harper.

During an intermission cigars and refreshments were served. Mr. Ward played the piano.

Part 2—Italian selections, Arthur Pazzagli; popular songs, Hintman and Burns; dramatic recitations, E. H. Fenstermacher; "The Musical Tramp," John Kane; Spanish Houdini, handcuff king, Raul Morales;

wrestling matches: (a) Huber (Gatun) vs. Andrews (Empire); (b) "Maroun Rachid" vs. Williams; (c) burlesque; finale, orchestra.

The program for the exercises on Wednesday evening, March 5, is, as follows: Selection, Gray's orchestra; address of welcome, Lieut.-Col. W. L. Sibert, chairman of executive council; selection, tropical quartet, Messrs. Ross, Dickson, Case, and Acher; "As Others See Us," Mr. A. B. Dickson, superintendent of clubhouses; soprano solo, Mrs. C. R. Hughes; a brief retrospect, Mr. F. G. Smith; address, Mr. Justice Thos. E. Brown, Jr., of the Supreme Court, Canal Zone; one-minute speeches, prominent citizens; selection, tropical quartet.

At 9.45 p. m., on the lower floor, will follow a public reception, inspection of the building, orchestra selections, buffet lunch, pool and bowling contests.

The Edith Harris Scott Concert Company will make its first appearance at Gatun on Friday evening, March 7. Those desiring, may reserve seats.

A second game of basketball between teams representing the I. C. C., and the McClintic-Marshall and American Bridge companies was played on Thursday evening, February 27. The score was 27 to 12, in favor of the I. C. C.

The results of the two bowling tournaments recently brought to a close are: *Ragtime tenpin tournament*—First prize, W. J. Humphrey and Chas. G. Wurster; second prize, G. A. Barte and Geo. Miller. *Ragtime duckpin tournament*—First prize, Theo. G. DeMoll and Chas. G. Wurster, second prize, W. A. Wells and C. E. Vierbuchen.

The library of the clubhouse is being entirely overhauled. A new classification has been made, the books renumbered, and catalogues, according to both the book names and the authors, have been compiled. A new set of rules governing the loaning of books has been drawn up and will be rigidly enforced.

CRISTOBAL.

The checker club met on Monday night for a social time and had a number of interesting matches.

There was a large attendance at the closing I. C. C. band concert on Wednesday night, February 26. About 600 people were in the Clubhouse, and about the bandstand and quarters.

The subject of debate for Wednesday night, March 5, will be "Resolved that the Panama Canal should be under civil government."

The regular gymnasium classes will meet on Thursday night at 8 o'clock, instead of Friday night.

The moving pictures will be on Friday night at 8.15 o'clock. Songs and slides will also be given.

All duckpin bowlers are requested to get in shape for the opening of the Isthmian Duckpin League on Saturday night, March 8.

Misdirected Letters.

ANCON, C. Z., March 5, 1913.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received at the office of the Director of Posts, and may be secured upon request of the addressees:

Antolin, Antonia (pkg.)	Hewitt, Edward S.
Baker, E. A.	Hilders, J. A., (pkg.)
Barrow, George S.	Hill, Charles Daniel
Beeler, Miss Lydia (pkg.)	Hill, Iver G.
Brown, Harry L.	Holland, Arthur A.
Brown, Rev. R. T.	Holloway, William
Bruce, S. R.	Janus, Rodger
Cannon, Mrs. Nina	Kennedy, Miss Mary (pkg)
Carrigan, Mrs. W. E.	Koch, Mrs. Harry
Casanova, Mrs. T. V.	Kountz, W. R.
Compton, Rolla	Lawless, M. C., (2)
Coward, Frank M.	Lieth, T. R. Vonder
Craig, Jas. W.	Linde, Henry J., (pkg.)
Craig, Walter C.	Lohman, Charles
Crawford, Henry P.	Lynch, Clement A.
Dexter, Edwin G. (pkg.)	McCoy, L. G.
Dubendorf, John	Messam, James A. (pkg.)
Dubendorf, John	Motz, Leon
Dustheimer, C. C.	Mudgett, Edw. E.
Egan, Colonel A. H.	Pray, Mrs. William
Egan, Miss Gertrude M.	Ralph, B. Sheriff
Estwick, Sam'l.	Rogers, Mrs., Box 49.
Feldman, R.	Sampsel, J. B.
Foster, Mrs. J. R.	Sloly, Felix J.
Gallahar, Wm. F.	Smith, Miss Curaleen
Garvin, Rev. J. F.	Stanton, W. D.
Guilbrow, Rufus T. (pkg.)	Taiti, Domingo
Hale, David J.	Turner, Edward S.
Hallin, F. W.	Wise, Master Elwood
Hansen, Mrs. O. P.	Young, James C.

Married.

EVANS-DUNCAN—On February 19, at St. Luke's Chapel, Ancon, Miss Lillian A. Duncan of San Antonio, Texas, to David J. Evans of Los Angeles, Cal., the Reverend Henry A. Brown officiating. Canal Zone residence, Gorgona.

FOUND—On February 26, 1913, between Las Casadas and Empire, one revolver. Owner can obtain same on proper identification at Empire police station.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Advance.....	P. R. R.	Friday.....	Feb. 28
Panama.....	P. R. R.	Thursday.....	Mar. 6
Allianca.....	P. R. R.	Wednesday.....	Mar. 12
Colon.....	P. R. R.	Tuesday.....	Mar. 18
Advance.....	P. R. R.	Tuesday.....	Mar. 25
Panama.....	P. R. R.	Monday.....	Mar. 31
Allianca.....	P. R. R.	Saturday.....	Apr. 5
Colon.....	P. R. R.	Saturday.....	Apr. 12
Advance.....	P. R. R.	Saturday.....	Apr. 19
Panama.....	P. R. R.	Friday.....	Apr. 25
Allianca.....	P. R. R.	Thursday.....	May 1
Colon.....	P. R. R.	Wednesday.....	May 7
Advance.....	P. R. R.	Tuesday.....	May 13
Panama.....	P. R. R.	Tuesday.....	May 20

CRISTOBAL TO NEW YORK.

Colon.....	P. R. R.	Thursday.....	Mar. 6
Advance.....	P. R. R.	Wednesday.....	Mar. 12
Panama.....	P. R. R.	Tuesday.....	Mar. 18
Allianca.....	P. R. R.	Monday.....	Mar. 24
Colon.....	P. R. R.	Sunday.....	Mar. 30
Advance.....	P. R. R.	Monday.....	Apr. 7
Panama.....	P. R. R.	Saturday.....	Apr. 12
Allianca.....	P. R. R.	Friday.....	Apr. 18
Colon.....	P. R. R.	Thursday.....	Apr. 24
Advance.....	P. R. R.	Thursday.....	May 1
Panama.....	P. R. R.	Wednesday.....	May 7
Allianca.....	P. R. R.	Tuesday.....	May 13
Colon.....	P. R. R.	Monday.....	May 19
Advance.....	P. R. R.	Monday.....	May 26

NEW YORK TO COLON.

Metapan.....	U. F. C.	Wednesday.....	Feb. 26
Prinz Sigismund.....	H.-A.	Saturday.....	Mar. 1
Tivives.....	U. F. C.	Saturday.....	Mar. 1
Tagus.....	R. M.	Saturday.....	Mar. 1
Zacapa.....	U. F. C.	Wednesday.....	Mar. 5
Prinz Joachim.....	H.-A.	Saturday.....	Mar. 8
Sixola.....	U. F. C.	Saturday.....	Mar. 8
Almirante.....	U. F. C.	Wednesday.....	Mar. 12
Prinz Eitel Friedrich.....	H.-A.	Saturday.....	Mar. 15
Oruba.....	R.-M.	Saturday.....	Mar. 15
Carrillo.....	U. F. C.	Saturday.....	Mar. 15

COLON TO NEW YORK.

Santa Marta.....	U. F. C.	Thursday.....	Mar. 6
Prinz August Wilhelm.....	H.-A.	Tuesday.....	Mar. 11
Metapan.....	U. F. C.	Thursday.....	Mar. 13
Prinz Sigismund.....	H.-A.	Monday.....	Mar. 17
Tivives.....	U. F. C.	Tuesday.....	Mar. 18
Clyde.....	R.-M.	Tuesday.....	Mar. 18

NEW ORLEANS TO COLON.

Atenas.....	U. F. C.	Saturday.....	Mar. 1
Parismina.....	U. F. C.	Wednesday.....	Mar. 5
Turrialba.....	U. F. C.	Saturday.....	Mar. 8
Cartago.....	U. F. C.	Wednesday.....	Mar. 12
Abangarez.....	U. F. C.	Saturday.....	Mar. 15

COLON TO NEW ORLEANS.

Abangarez.....	U. F. C.	Thursday.....	Mar. 6
Heredia.....	U. F. C.	Saturday.....	Mar. 8
Atenas.....	U. F. C.	Thursday.....	Mar. 13
Parismina.....	U. F. C.	Saturday.....	Mar. 15

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

Hamburg-American steamers for New York, via Kingston and Santiago de Cuba, sail thus: the *Prinz Joachim* and the *Prinz August Wilhelm* on alternate Tuesdays at 10 a. m., and the *Prinz Sigismund* and the *Prinz Eitel Friedrich* on alternate Mondays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays, at 3 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m. and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct Tuesdays at 3 p. m.

The Panamanian Steamship Company's steamer *Panama* will sail from Panama for Aguadulce and Pedregal (Boquete) on March 11, and 19.

The following ships arrived at, or departed from, the port of Balboa during the week ending March 1:

Arrivals—February 25, *Palena*, from Valparaiso; February 26, *Urubamba*, from Callao; February 28, *Barracouta*, from Central America.

Departures—February 23, *Huallaga*, to Mollendo; February 24, *Manavi*, to Guayaquil; February 24, *Mexico*, to Valparaiso; February 24, *Santa Rita*, to Port Harford; February 26, *Pennsylvania*, to San Francisco; March 1, *Ecuador*, to Guayaquil.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, MARCH 12, 1913.

No. 29.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Change of Plan for Pacific Entrance Excavation.

Excavation of the Canal channel for about a mile south of Miraflores Locks has been carried on by dredges and hydraulic monitors, followed by steamshovels, in a pit protected against inundation, by the waters of the Pacific, by an earth and rock dike across the channel, which is being excavated to the south by dredges. It has been decided to extend the area of dredge operations, and another dike has been built across the channel 3,300 feet north of the present one, and opposite station No. 2114. In the section between the dikes, all excavation, so far, has been done by monitors and dredges. These have reached a general elevation of about 22 feet below sealevel. Steamshovels will excavate 409,000 cubic yards from this section, carrying the bottom to reference minus 45, for a width of 200 feet, and then the dredges will remove the old dike and enter the area. Their work of completing the channel to 45 feet below mean sealevel, with a bottom width of 500 feet, will entail the removal of about a million cubic yards, principally soft material.

Canal Excavation in February.

The grand total of Canal excavation to March 1 was 192,996,027 cubic yards, leaving to be excavated 25,142,272 cubic yards.

The total excavation for the month of February was 2,108,530 cubic yards, as compared with 2,643,410 cubic yards in the corresponding month last year, and 2,714,174 cubic yards for February, 1911.

The dry excavation last month amounted to 1,390,324 cubic yards, and was entirely by steamshovels. The dredges and monitors removed 718,206 cubic yards. The progress in the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 315,190 cubic yards. Of this total, 11,241 cubic yards consisted of dry excavation at Gatun Locks, and the remainder

—303,949 cubic yards—was wet excavation from the Atlantic entrance.

The total excavation in the Central Division was 996,800 cubic yards, which includes 6,304 cubic yards from the Culebra Cut section charged to the Obispo Division.

In the Pacific Division, the total excavation was 796,540 cubic yards, 382,283 cubic yards of which consisted of dry excavation. Of the 414,257 cubic yards of wet excavation, 239,032 cubic yards were taken from the Pacific entrance, and 175,225 cubic yards from the site of the Balboa terminals.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follows:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—			
Locks, dam and spillway	11,241		11,241
Mindi			
Terminal			
Total	11,241		11,241
Wet excavation—			
Atlantic entrance	303,949		303,949
Locks, dam and spillway			
Terminal			
Total	303,949		303,949
Total wet and dry excavation	315,190		315,190

CENTRAL DIVISION.

Dry excavation—		
Culebra Cut	290,496	9 0,496
Chagres section		
Obispo Division	6,304	6,304
Total	996,800	996 8,00

PACIFIC DIVISION.

Dry excavation—		
Locks, dams and spillways	12 980	12,980
Terminals	32,743	36 003
Prism	331,778	332,300
Total	377 501	382,283
Wet excavation—		
Pacific entrance	239,032	239,032
Miraflores Locks		
Diversions		
Terminals	175,225	175 225
Total	414,257	414,257
Total wet and dry excavation	791,758	796,540

TOTAL CANAL EXCAVATION.

Dry excavation	1,385,542	1,390,324
Wet excavation	718,206	718,206
Total	2 103,748	2,108,530

LOCKS AND DAMS.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	Cu. Yds.	Cu. Yds.
Concrete placed in locks	30,780	39,273	70,053
Concrete placed in dams and spillways	3,028	4,403	7,436
Fill placed in dams	55 752	55 000	123 752

Mean rainfall along Canal (ten stations) 1.09 inches. By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal such as prism, diversions, or locks, etc.; that is, it

represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

Terracing Canal Bank Opposite Empire.

Two steamshovels will be set at work in a few days terracing the east bank of the Canal for a distance of about 3,000 feet south of the Empire suspension bridge. A break in the Canal bank has developed in this section, and five terraces, involving the removal of approximately 400,000 cubic yards of material, will be excavated for the purpose of lessening the weight. Each terrace will represent about the width and depth of the average steamshovel cut.

Peninsulas and Islands in Gatun Lake.

Decree 46, of the Republic of Panama, dated May 17, 1912, temporarily withdrew from entry all public lands within the 3-mile belt surrounding the 85-foot Gatun lake level, with the object, as set forth in the preamble of the decree, of "Preventing any claim against the nation on the part of private parties, and to avoid any differences with the Government of the United States." The text of the decree, follows:

"Article 1. The right of the United States to use, occupy, and control the area of land to be covered by Gatun Lake, and that part of the shores of the lake rising to an elevation of 100 feet above mean sealevel for the purpose hereinbefore indicated is hereby recognized in pursuance of Article 2 of the (Hay-Bunau-Varilla) Treaty.

"Article 2. There are hereby temporarily withdrawn from public entry, or otherwise, the national lands included in a belt three miles in width, surrounding, and immediately contiguous to the 100-foot contour line above indicated.

"Article 3. The 100-foot contour line above mentioned shall be provisionally established upon a survey to be made by competent engineers, one to be appointed by the Republic of Panama, and one by the Isthmian Canal Commission authorities, which said engineers shall make a joint report of their work to the Government of the Republic of Panama, and the Canal Zone authorities, such report to be accompanied by maps and data fully elucidating the survey.

"Article 4. The rights of persons already legitimately acquired shall not in any way be prejudiced thereby."

When the waters of Gatun Lake rise to the 85-foot, or normal lake level, they will form a great many peninsulas and small islands, some lying within, others outside, the 10-mile strip. There will be 30, or more, small islands in the lake, west of the Canal, and

NOTES OF PROGRESS.

(Continued.)

about 20 to the east of it, outside the Canal Zone boundary lines. The United States proposes to exercise jurisdiction over every part of these islands, and also over two peninsulas, one on each side of the Canal, egress from which cannot be had, except over land in the Canal Zone, or by crossing the waters of the lake. The peninsula to the east of the Canal will form part of the permanent coast line in the Gatun River valley, while the one on the west will be a part of the coast line of the valley of the Trinidad and Siri rivers.

The shores of the lake, above the 100-foot contour line, will remain in the jurisdiction of the Republic of Panama. No steps have as yet been taken toward making the survey mentioned in the above decree.

Filling for Balboa Townsite.

Spoil from pipeline suction dredge No. 85, at work in the approach to the projected new piers in Balboa harbor, is being pumped through a relay station into the triangular area between the Balboa branch of the Panama railroad, the track to the Balboa commissary store, and Sosa Hill. The area contains about 66 acres and was reclaimed from swamp with

spoils from Culebra Cut. The hydraulic filling will raise it to a more nearly even surface, with an elevation of at least 20 feet above sealevel. On the south side of the track to the commissary, dry filling is being carried toward the base of Ancon Hill, for the elimination of a lake formed by the cutting off of an estuary from the bay. The made land between Ancon and Sosa hills will be the site of Government employees' residences in the permanent town of Balboa, though definite plans for the layout have not been fixed.

Reclaiming Swamp Between Ancon and El Diablo.

In the reclamation of the 400-acre swamp lying between Ancon and Diablo hills, and the east toe of Sosa Dam and the Panama railroad, a track is being laid along the south side of the main drainage ditch to allow the dumping of dry spoil for the construction of a retaining wall. The swamp is being filled with material pumped in from pipeline suction dredge No. 85, and the retaining wall will be built to a height of about six feet above the level of the earth, or 15 feet above sealevel, to regulate the flow of the hydraulic spoil. The track is about 3,000 feet long. The filling of the swamp is proceeding satisfactorily, though not as rapidly as anticipated, since the dredge discharges by day into the Balboa townsite, and fills the swamp only at night.

Transfer of Stores at Balboa.

The construction of the foundations for the permanent machine shop, and other buildings, has required that a large part of the goods in the quartermaster's storehouse at Balboa be moved. The pipes, oils, greases, heavy spare parts for floating equipment, bar iron and steel, lumber, cement, fire brick, and cable, constituting more than half the value of the stores, have been transferred to dump No. 1, almost opposite the Panama railroad yardmaster's office at the north toe of Sosa Hill. Buildings and racks are being erected for their temporary sorting and protection, pending their removal to the permanent storehouse, which will be the largest of the Balboa terminal buildings. The small stores in the present storehouse proper will not be moved, as the building is not in the way of buildings proposed at present, though a platform at the rear will be torn away. The oil house and rope shed, the pipe and steel racks, and a house for cement, adjacent to the storehouse, have been demolished.

CONCRETE WORK IN THE LOCKS AND SPILLWAYS.

Over 98 per cent of the total of 4,446,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on March 8, the amount in place being 4,367,897 cubic yards.

GATUN LOCKS AND SPILLWAY.

Over 96 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on March 8, being 1,978,753 cubic yards, out of a total of 2,043,730. In the spillway of Gatun Dam there had been placed 220,520 cubic yards out of a total of 225,000 cubic yards. A statement of the amount placed each working day of the week ending March 8, and of the total, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			Large stone.	Total.				
	Concrete placed.	Hours worked.	No. of mixer.		Cu. Yds.	Cu. Yds.	Concrete placed.	Hours worked.	No. mixers used.
	Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.			
March 3.....	1,626	27.10	4	.....	1,626	192	6	1	
March 4.....	1,462	24.36	4	.....	1,462	129	6	2	
March 5.....	1,662	27.70	4	.....	1,662	140	6	2	
March 6.....	1,640	27.32	4	.....	1,640	88	6 15	2	
March 7.....	1,508	25.12	4	.....	1,508	110	6 15	1	
March 8.....	1,266	21.10	.....	.....	1,266	102	6 5	2	
Total.....	9,164	152.70	4	.....	9,164	761	39 00		
Previously reported.....				.....	1,969,589	219,759			
Grand total.....				.....	1,978,753	220,520			

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 914,685 cubic yards, having been placed at the close of work on March 8. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixer.	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.
March 3.....				229	22.00	3	2		231
March 4.....				241	21.00	3			241
March 5.....				246	18.50	2			246
March 6.....				249	17.50	3			249
March 7.....				209	15.50	2			209
March 8.....				235	19.50	2	9		244
Total				1,409	114.00	2.5	11		1,420
Previously reported.....								4,493	913,265
Grand total.....								4,493	914,685

MIRAFLORES LOCKS AND SPILLWAY.

Over 98 per cent of the concrete for the system of two twin locks at Miraflores was in place on March 8, the total amount on that date being 1,474,459 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each working day last week, follows:

DATE	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 1-cubic yard mixers.			Mixed by hand.	Large stone.	Total.	SPILLWAY. AUXILIARY PLANT.						Total.
										1 cubic yard mixers.			½-cubic yard mixers.			
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers				Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	
March 3.....	Cu. Yds. 1,170	32.00	8	Cu. Yds. 122	11.00	2	Cu. Yds. Cu. Yds. Cu. Yds.	Cu. Yds. 1,292	175	8.00	2	Cu. Yds.			175	
March 4.....	1,306	38.83	8	126	14.50	2		1,522	159	8.00	2				159	
March 5.....	1,568	35.83	8	138	17.00	2		1,706	192	10.00	2				192	
March 6.....	1,132	30.33	8	102	12.50	2		1,234	204	9.50	2				204	
March 7.....	1,136	32.83	8	86	11.00	2		1,222	204	9.50	2	23	2.50	1	275	
March 8.....	1,120	31.00	8	84	11.00	2		1,204	219	12.00	2	44	5.00		419	
Total.....	7,522	200.82	8	658	77.00	2		8,180	1,153	57.00	2	67	7.50	.33	*1,424	
Previously reported.....								3,693	1,466,279						7,969	
Grand total.....								3,693	1,474,459						9,393	

*Includes 204 cubic yards laid by the Miraflores Locks construction plant—2 cubic-yard mixers.

STEAMSHOVEL RECORDS.

Work of Central Division Machines During the Month of February.

During the month of February, the total amount of material excavated in the Central Division was 996,800 cubic yards, of which 190,131 cubic yards were classified as earth, and 806,669 cubic yards as rock.

Of the total, 990,496 cubic yards were primary excavation in the Canal prism, and 6,304 cubic yards were from the Obispo Diversion.

The total—996,800 cubic yards—was removed by steamshovels.

The high record for the month was made by shovel No. 206, working 44½ days (*) in the Culebra district, which excavated 54,500 cubic yards of rock.

The second best record for the month was made by shovel No. 260, working 43 days (*) in the Culebra district, which excavated 50,756 cubic yards of rock.

The best record for a shovel of the 70-ton class was made by shovel No. 109, working 23 days in the Culebra district, which excavated 31,580 cubic yards of earth.

Shovel No. 205, working in the Empire district, made a high record for one day by excavating 2,831 cubic yards of earth on February 20.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best record for the month, and for one day are shown in the following table:

BEST RECORDS FOR THE MONTH.

CULEBRA DISTRICT.

SHOVEL No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
206.....		54,500	54,500	*44½
260.....		50,756	50,756	*43
203.....	38,344		38,344	23

EMPIRE DISTRICT.

205.....	40,559	40,559	23
227.....	38,473	38,473	23
214.....	30,600	30,600	23

BEST RECORDS FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
205	Empire.....	Feb. 20	Rock.....	2,831
227	Empire.....	Feb. 10	Rock.....	2,717
205	Empire.....	Feb. 15	Rock.....	2,592
208	Culebra.....	Feb. 6	Rock.....	2,584
208	Culebra.....	Feb. 28	Rock.....	2,580
207	Culebra.....	Feb. 28	Rock.....	2,520
207	Culebra.....	Feb. 26	Rock.....	2,440

*The excess number of days over and above the actual number of working days in the month of February (23) is due to double shift and night work.

Obituary.

Mr. H. B. Mattimore, an employee of the Mechanical Division at Gorgona, died in Colon Hospital on March 8. He was 49 years of age, a widower, and had been on the Isthmus eight years. He is survived by a brother, Joseph Mattimore, living at Gorgona.

Matron for Palo Seco Leper Asylum.

A matron has been appointed at the Palo Seco leper asylum, effective Monday, March 10. She is the wife of the superintendent in charge, and will have supervision over the women and children in the institution. The inmates now number 50, and, although this number has been equalled once or twice before, it has never been exceeded. The mem-

bers of the colony are usually tractable, and live up to the regulations of the institution. Occasionally, however, there is one that becomes discontented with the isolated life, and oversteps the bounds. The discipline in these cases usually consists of confinement for a short period, deprivation of their tobacco, or stopping privileges for a certain period. Once in a while, an inmate effects an escape, but he generally voluntarily returns.

Contest Among Gatun Volunteer Firemen.

For the purposes of fire protection at Gatun, the district is divided into three sections, namely, that situated east of the locks; that situated between the locks and the French canal, and that west of the canal, which includes the spillway. The section east of the locks is accessible to the hose wagon, but for the immediate protection of the middle and west sections, there are two volunteer companies, Nos. 2 and 3, respectively. There has always been a friendly rivalry between the two companies, especially since the spillway, or No. 3 company, won the flag two years ago.

On March 2, a tournament was held in front of the Gatun fire station, consisting of four events. A corps of judges and timekeepers was chosen, and the official results, as announced, were as follows:

Event No. 1—Run with cart and laying three lengths of hose, connecting up and getting water. Time of No. 2 company, 37-1/10 seconds; No. 3 company, 36-2/5 seconds.

Event No. 2—Making running connections with four lengths of hose laid parallel, connecting up and getting water. Time of No. 2 company, 24-4/5 seconds; No. 3 company, 27 seconds.

Event No. 3—Replacing middle section of live line of hose, with one from hose reel, water at full head. Time of No. 2 company, 20-3/10 seconds; No. 3 company, 23-4/5 seconds.

Event No. 4—Individual contest, consisting of running 50 feet, breaking coupling, and connecting nozzle. Time of No. 2 company, nine seconds; No. 3 company, 12-3/5 seconds.

Total time—No. 2 company, 91-1/5 seconds; No. 3 company, 99-4/5 seconds. This gave No. 2 company a margin of eight and three-fifths seconds; it was declared the winner, and was presented with a flag and \$100 in gold. It is probable that a banquet will be held shortly, at which the officials and the Gatun volunteer firemen will be the guests of No. 3 company.

Manganese Steel Buckets for Dredge Corozal.

The hard digging which the ladder dredge Corozal has been doing in rock in the Pacific entrance channel has caused severe wear on its buckets, and the lips, which make the cutting contact, are worn and jagged. The buckets have shown some weakness in the back, and an order has been placed with the Taylor-Wharton Iron and Steel Company of High Bridge, New Jersey, for six buckets with body, lip, and bushings of manganese steel, ready for use; and six lips of manganese steel, for use interchangeably on the buckets. These are for experimental purposes, and if they should be superior to the present carbon steel buckets, the latter will be supplanted throughout. These buckets have a capacity of 35 cubic feet each, and as made of carbon steel, weigh 5,400 pounds. The dredge operates 39 of them on a chain.

EXECUTIVE ORDER

Relating to Entry of Alien Laborers Into Continental United States.

Whereas, by the Act entitled; "An Act to regulate the immigration of aliens into the United States," approved February 20, 1907, whenever the President is satisfied that passports issued by any foreign government to its citizens to go to any country other than the United States or to any insular possession of the United States or to the Canal Zone, are being used for the purpose of enabling the holders to come to the continental territory of the United States to the detriment of labor conditions therein, it is made the duty of the President to refuse to permit such citizens of the country issuing such passports to enter the continental territory of the United States from such country or from such insular possession or from the Canal Zone;

And Whereas, upon sufficient evidence produced before me by the Department of Commerce and Labor, I am satisfied that passports issued by certain foreign governments to their citizens or subjects who are laborers, skilled or unskilled, to proceed to countries or places other than the continental territory of the United States, are being used for the purpose of enabling the holders thereof to come to the continental territory of the United States to the detriment of labor conditions therein;

I hereby order that such alien laborers, skilled or unskilled, be refused permission to enter the continental territory of the United States.

It is further ordered that the Secretary of Commerce and Labor be, and he hereby is, directed to take, through the Bureau of Immigration and Naturalization, such measures, and to make and enforce such rules and regulations as may be necessary to carry this Order into effect.

WM. H. TAFT.

THE WHITE HOUSE,
February 24, 1913.

[No. 1712.]

Work of Lidgerwood Unloaders in February.

During the month of February, the following Lidgerwood trains and cars were unloaded by the Central Division:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa.....	5	1,033	20,660
Miraflores.....	2	298	6,258
Gamboa.....	3	860	18,030
Total.....	10	2,191	44,948

I. B. of S. S. and D. M.

The next regular meeting of Local No. 19, I. B. of S. S. and D. M., will be held at the Empire lodge hall, Sunday, March 16, at 12.15 p. m. All members are requested to be present.

Revenue Collections for February.

Revenue collections other than postal collections for the month of February, follows:

Bicycle, chauffeur and navigator licenses.....	\$101.00
Motor vehicle licenses.....	186.00
Steamboat inspection.....	259.05
Insurance collections.....	821.66
Taxes, licenses, etc., (deputy collectors of revenues).....	4,887.87
Cash received from estates.....	893.21
Value of estates closed.....	2,389.72

LOCAL MARKET PURCHASES.

Increased Sales to Commissary-Subsistence Department of Fish, Fruits, and Vegetables.

Since the issuance of the Chairman's circular in September, 1908, authorizing the Commissary-Subsistence Department to purchase food supplies in the open markets of Panama, without advertising, the quantity so procured has increased about 400 per cent, though at present, approximately ten times as much green food is imported by the department as is bought on the Isthmus. In the early days, the local market supply was small and poor, but in response to steady demand, there has been great improvement in the quantity, quality, and variety of its goods, especially vegetables.

Formerly, it was almost impossible to obtain American vegetables, but now a number of Italian and Chinese truck gardeners are raising cabbage, okra, lettuce, string beans, tomatoes, radishes, onions, egg plant, parsley and spinach, as well as chayote, and other local vegetables which have found favor among the commissary stores, and the government hotels and messes. Practically all of the local buying of vegetables is in the city of Panama, at the public market wharf, or at the gardens of the truckers. About 10,000 pounds are purchased each month.

Panama is also the exclusive fish market, except for a small quantity of sea turtle—classified as fish in the buyers' categories—which is grown and sold at Colon. The local purchasing agent, or a representative, visits the Panama fish market each morning about the time of high tide. The best catches are made at night, and the fishing boats come in with the tide, which enables them to moor close by the wharf. The fish are brought ashore in baskets. Spanish mackerel, corbina, and red snapper are regarded by the Commission buyers as first grade fish, and are the only ones bought for sale to Americans. The flounder and the bobo, second grade fish, are exposed in large quantities, and were formerly supplied to West Indian and European laborers' messes, but importations of fish from the United States have been substituted for them. In all, about 15,000 pounds of fish are taken each month.

The market is quick for first grade fish, oysters, lobsters, and shrimp. Sometimes no lobsters, always in demand, will be brought in; and recently a Commission buyer, returning with a special order to a table on which he had seen a thousand shrimp twenty minutes earlier, found it bare. The department maintains a steady supply of first grade fish by means of a reserve in storage; auxiliary to this, it makes most of its purchases from the principal fish dealer in the city.

Usually, the buyer can obtain all he needs at the morning market; if not, or in response to a special order from a commissary store, hotel, or government employe, who has a charge account with the department, he visits the market at the coming of the afternoon tide.

A hundred yards north of the fish market is a ramp, leading to the beach and known as the "Playa de Frutas." Square sterned, two-masted boats, considerably larger than the 20-foot "bug-eyes" of the fishermen, sail to the foot of the ramp at high tide, bringing from up and down the bay cargoes of coconuts, bananas, oranges, watermelons,

papayas, pineapples, plantains, and other indigenous fruits in season. The fruit purchased has increased in quantity, but not in quality, as slight effort is made at cultivation.

The department buys most of its bananas at Matachin and Monte Lirio, where they are brought to the railroad in cayucos plying the Chagres and Gatun rivers. It employs a riverman to visit the natives up the Chagres valley and stimulate the trade. About 500 bunches are bought each week, and distributed every Monday. Recently, the purchase of sugar cane for the West Indian laborers has been resumed. Earlier purchases were made from natives in the Gatun Lake area, but, following its depopulation, there was a lull in the market, until fresh patches were planted around the new homes. About a thousand stalks of cane are distributed each week, and eaten raw. A Colon dealer has applied for permission to erect a shack at Monte Lirio for handling coconuts; and there are others in the produce business on a small scale, but at present, the Commission is, by far, the largest single buyer of fruits, vegetables, and fish on the Isthmus.

Empire-Gamboa Wagon Road.

Work on the new Empire-Gamboa highway was begun in January, and a section of it, about a mile long, has been subgraded. In order to avoid changes in the route, which might be made necessary by the relocation of railroad tracks in the vicinity of Tower "R," it was decided to postpone the construction of that part of the road between Tower "R," and the old engine house until later. This section comprises a detour of about 1,900 feet, swinging to the north, so that the road for a short distance will traverse the bank of the Chagres River. The engine house was used as a starting point, and the operations are being extended south from there. The road will be 16 feet in width, and will conform in all essential respects to the specifications governing the construction of the Empire-Chorrera road, which is generally regarded as one of the best examples of roadbuilding undertaken, so far, in the Canal Zone. According to the route planned, the highway, from Tower "R" to its intersection with the Las Cascadas plantation road, will be five miles and 350 feet in length, as compared with an air line distance of about four miles. The saddles between hills, and other natural aids, are taken advantage of, and, although there will be a number of curves, none of them will be sharp. At only one place will the gradients exceed six per cent, the exception being a hill, where, for a distance of about 700 feet, the grade will be 7.5 per cent. The heaviest excavation work is at the Gamboa end, and the section of least excavation is on the Gamboa dump, which will be utilized for the distance of about a mile. The original survey provides for crossing the Panama railroad relocation at the Obispo junction, and for recrossing it again farther on, but a plan is being considered of widening the right-of-way of the railroad relocation, and building the highway parallel with it for a distance of about 1,800 feet, which will do away with one crossing, and reduce the total length to less than five miles. There are a number of culverts to be built, but only two of size, namely, over the Obispo Diversion, and the Rio Sardinilla. The road will be constructed wholly by prison labor, the force at present numbering about 125. The prisoners are

housed in a stockade, converted from a French building, formerly used as a mess hall, situated at the old Greek camp at Gamboa. This site is also the headquarters at the present time of the deputy warden and guards of the Zone penitentiary, who occupy the old silver quarters nearby. The cost of the road is estimated at \$17,952.98, exclusive of prison labor.

Structural Steel for Balboa Shops.

The United States Steel Products Company, which has the contract for the fabrication of all of the structural steel framework for the permanent shop buildings at Balboa, has advised the Canal Commission that delivery of the order will be expedited, and that it has made special arrangements for the water transportation. When the vessels carrying the material arrive at Cristobal, they will berth at a dock where the cargo can be unloaded with the most facility.

PERSONAL.

Col. John L. Phillips, and Lieut.-Col. Charles F. Mason, departed for the United States, on their annual leaves of absence, on the *Cristobal*, which sailed on Monday, March 10.

Red Cross Finances.

A statement of the finances of the Canal Zone Chapter, American National Red Cross, for the month of February, follows:

RECEIPTS.	
February 1. On hand.....	\$2,520.96
February 11. Membership dues.....	4.00
February 13. Membership dues.....	3.00
February 20. Sale of Christmas seals.....	155.17
February 28. Sale of Christmas seals.....	39.30
Total receipts.....	\$2,722.43
DISBURSEMENTS.	
February 15. Relief of wife of 'Zone prisoner.....	\$5.00
February 20. Relief of American family at Panama.....	10.00
February 24. Board of American family at Station Hotel, Panama.....	73.50
Total disbursements.....	\$88.50
February 28. Balance on hand.....	\$2,633.93
JOHN L. PHILLIPS, Treasurer.	
Approved: EDW. SCHILDHAUER, Vice-Chairman.	

Visit of House Committee on Naval Affairs.

The House Committee on Naval Affairs sailed for the Isthmus on the gunboat *Dolphin* and converted yacht *Maryflower*, on Thursday, March 6, and is scheduled to arrive at Colon on Friday, March 14. The party consists of eleven gentlemen, nine ladies, and a messenger. It will make a stay of about six days.

Immigration at Port of Ancon.

According to the figures of the quarantine service, the number of persons who landed at the port of Ancon from foreign ports during February was 451, consisting of 361 cabin, and 90 steerage passengers. The number of persons leaving for foreign ports in the same month was 575, consisting of 468 cabin, and 107 steerage passengers. The number of persons who embarked over those who landed was 124. The total number of persons who landed on the Isthmus during February over those who embarked was 1,536.

Missing Man.

Any one having information regarding the whereabouts of Mr. John A. Miller of Philadelphia, Pa., who is supposed to be on the Isthmus, is requested to communicate with the American Legation, Panama.

SOCIAL LIFE OF THE ZONE.

Women's Clubs—Miscellaneous Notes.

At the meeting of the Cristobal Woman's Club on Wednesday afternoon, March 5, a program on woman suffrage was given for the first time in the history of the Zone clubs. Two papers, one for, and the other against the idea, were read, and a lively discussion followed. There was a good attendance.

At the meeting of the Gatun Sunshine Society, held on Monday, February 24, it was decided to disband on July 1, the end of the society's year, in view of the departure of so many of the members from the Isthmus.

Panama Auxiliary, No. 1, of the United Spanish War Veterans, held a meeting in the Empire lodge hall, on Sunday evening, February 9, in commemoration of the birthdays of Washington, Lincoln, and McKinley. An appropriate program was given by the members, at the close of which, refreshments were served.

A joint meeting of Panama Auxiliary, No. 1, and of Chagres Camp, No. 1, United Spanish War Veterans, was held at the Gorgona lodge hall, on Sunday evening, March 2. On this occasion, the camp, through its commander, presented the ladies of the auxiliary with a flag, ballot box, and gavel. The gifts were suitably acknowledged by the president of the auxiliary, Mrs. Ruth Purdue. A program was then given, during which, the president presented a gold badge to Mrs. Anna Hoffman, the past president, on behalf of the auxiliary. The auxiliary held a meeting in the Gatun lodge hall, on Sunday evening, March 9, to commemorate the Spanish-American War.

Church Notes.

The corner stone of the new Baptist church building in Colon will be laid on Good Friday, March 21, at 3.30 p. m. The new building will occupy a site on Canal Zone territory, directly opposite the concrete building destroyed by fire on March 23, 1911. It will be a frame structure 40 by 60 feet, in size, with a seating capacity of about 200. The old church was erected in 1909, at a cost of \$7,500, a part of this sum having been furnished by the Southern Baptist Mission Board, and the remainder, through subscriptions, by the local church. Following the loss of the building, the congregation purchased a tent, where services have been conducted regularly. The congregation now numbers 130.

The month's mission, conducted in the Roman Catholic churches of the Canal Zone, was closed on Sunday morning, March 2, with the celebration of mass at the church of the Immaculate Conception in Colon. The missioner, the Rev. Father Molyneux, C. M., of Germantown, Pa., sailed for the United States, on Thursday, March 6. The mission was begun with solemn evensong at St. Ferdinand's Church, Empire, and was continued with daily services until Sunday morning, February 16. On the evening of that day, Father Molyneux opened the mission at the church of St. Categan, Gorgona, which was closed with the celebration of mass on Saturday morning, February 22. A feature of the mission was a question box, which was opened to all. On Sunday evening, February 23, the missioner began a series of services at the church of the Immaculate Conception, Colon. During the week, more than 500 persons attended mass. Special services were held for

the children of the parish. This is the second mission that has been held in the churches of the Roman Catholic faith in the Canal Zone since the American occupation.

The monthly meeting of the Isthmian Ministers' Association was held at the seawall Methodist Episcopal Church, Panama, on Monday, March 3. The principal paper was read by the Rev. Carl H. Elliott, pastor of the Union Church, Cristobal; subject, "The religion of Henry James."

About 16 women of the Episcopal church attended the retreat at Christ Church, on Colon Beach, on Thursday, March 6.

On Monday evening, March 17, at 7.30 o'clock, the ceremony connected with the opening of the new hall, built by the Wesleyan Methodist Church, Panama, will take place. The President of Panama is expected to open the doors, and the British Minister, Sir. Claude Mallet, and Mr. Maurice H. Thatcher will take part in the program. The new hall is a concrete building, similar in type to the church adjoining. It will be used as a school-room, entertainment hall, and parsonage.

Canal Zone Postal Savings Bank Transactions.

A statement of Canal Zone postal savings bank transactions at Canal Zone postoffices for the month of February, follows:

NAME OF OFFICE.	Postal savings certificates issued.	Postal savings certificates paid.
Ancon.....	7,426.00	4,679.00
Balboa.....	8,643.00	4,084.00
Bas Obispo.....	1,145.00	955.00
Corozal.....	19,932.00	12,037.00
Cristobal.....	12,842.00	9,944.00
Culebra.....	10,881.00	5,682.00
Empire.....	8,120.00	3,509.00
Gatun.....	18,498.00	9,983.00
Gorgona.....	18,795.00	12,993.00
Las Cascadas.....	6,429.00	3,131.00
Matachin.....	1,165.00	444.00
Miraflores.....	6,892.00	3,493.00
Pariso.....	9,730.00	4,484.00
Pedro Miguel.....	11,649.00	6,649.00
Cristobal, Sta. "A".....	595.00	1,635.00
Cristobal, Sta. "B".....	1,693.00	656.00
Total.....	\$144,435.00	\$84,358.00
Deposits on hand February 1, 1913.....	\$517,773.00	
Amount deposited in February.....	144,435.00	
Amount withdrawn in February.....		\$84,358.00
Balance on hand March 1, 1913.....		577,850.00
	\$662,208.00	\$662,208.00

A benefit baseball game will be played at the Empire park on Sunday, March 16, beginning at 3.30 p. m., between the Culebra and Gorgona teams. The band of the United States Marine Corps will furnish music.

Married.

HOEHNE-TEEMAN—At Empire, on February 27, Miss Helen Elizabeth Teeman to Mr. Adelbert Hoehne, the Rev. A. A. Nellis officiating. Isthmian residence, Porto Bello.

MARSHALL-DAVIES—At Empire, on March 6, Miss Mary A. Davies to Mr. William J. Marshall, the Rev. A. A. Nellis officiating. Canal Zone residence, Culebra.

PARROTT-PERRY—At Ancon, on November 9, 1912, Miss Mamie J. Perry of Washington, D. C., to Mr. Joseph N. Parrott of Worcester, Mass., the Rev. H. A. Brown officiating. Canal Zone residence, Ancon.

Acting Assistant Chief Sanitary Officer.

ANCON, C. Z., March 8, 1913.

SPECIAL ORDER:

During the absence on leave of Col. John L. Phillips, Assistant Chief Sanitary Officer, Maj. Robert E. Noble is assigned as Acting Assistant Chief Sanitary Officer, and as such, in accordance with Paragraph 2, Minutes of the 119th meeting of the Isthmian Canal Commission, held in Washington, D. C., January 21, 1907, is authorized to approve for payment all vouchers, payrolls, and public bills, relating to this department. "By direction of the Chief Sanitary Officer."

W. C. GORGAS, Chief Sanitary Officer.

OFFICIAL CIRCULARS.

Reduced Rate Transportation.

CULEBRA, C. Z., March 7, 1913.

CIRCULAR No. 175-L:

Effective March 31, 1913, and, thereafter, until further notice, no reduced rate transportation to the Isthmus, will be granted to employees in advance of the assignment of nonhousekeeping or housekeeping quarters, except that the intermediate rate of forty-five dollars on Panama Railroad Steamship Line boats will be granted as heretofore, to relatives of employees visiting the Isthmus.

Any employee who brings his family to the Isthmus after March 31, 1913, in advance of a regular assignment to family quarters, will do so at his own risk, and no refund on regular tariff rates paid on the steamship line will be granted under such circumstances.

This action has become necessary on account of the large number of employees who have brought their families to the Isthmus without making provision for quarters, and the further fact that no assignments to family quarters will be made at Bas Obispo, Las Cascadas, Empire, or Culebra after March 31, 1913.

GEO. W. GOETHALS, Chairman.

Personal Injury Compensation.

CULEBRA, C. Z., March 8, 1913.

CIRCULAR No. 235-H.

The Executive Order effective March 1, 1913, issued by the President in accordance with the authority contained in Section 5 of the Panama Canal Act, provided a new method for the payment of compensation on account of injuries sustained by employees of the Isthmian Canal Commission, whether resulting in death or not. Approval was not given to the Sundry Civil Appropriation Act which contained the authority for making payments under this Order for injuries sustained on or subsequent to March 1, 1913, or for deaths resulting from such injuries, and until funds are provided by Congress no payments can be made on account of such injuries or deaths.

In order that no delay may occur in making payments after funds are provided, the same procedure in regard to the preparation of injury claims under the Act of May 30, 1908, as amended by the Act of March 4, 1911, and of recommendations for meritorious sick leave under the Act of February 24, 1909, will be followed in the case of all injuries sustained on or subsequent to March 1, 1913, whether resulting in death or not.

All claims for injury compensation, and all recommendations for meritorious sick leave will be held by the Examiner of Accounts until provision is made for payment.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Disposition of Official Records.

CULEBRA, C. Z., March 11, 1913.

CIRCULAR No. 479:

In accordance with Section 5 of the Sundry Civil Act, approved August 24, 1912, a committee has been appointed for the purpose of recommending the disposition of official records which have no permanent or historical value and will not be required for the permanent consolidated records.

This committee will pass on any papers which any department or division may recommend to this office as valueless. Form C. E. 402 has been provided for this purpose. A supply is forwarded herewith, and additional blanks may be obtained upon application to this office. This form should be submitted in duplicate, in order that the original bearing the approval of this office may be returned to the department or division concerned, after the committee has reviewed the papers recommended for destruction. Under no circumstances, however, should any records be destroyed without prior authority from this office.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Circular 159, Limiting Overtime, Cancelled.

CULEBRA, C. Z., March 7, 1913.

CIRCULAR No. 159-B:

Circular No. 159, limiting overtime to 50 hours for any employee in any one month, is hereby cancelled. Officials in charge of work will, however, be held responsible for working employees overtime in any case not an emergency. Overtime work, of course, increases the cost of any job upon which it is employed and will be considered a mark of inefficiency on the part of any official or employee authorizing it in other than absolutely necessary cases.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Chief Dispatcher.

PANAMA RAILROAD COMPANY,
COLON, R. P., March 5, 1913.

CIRCULAR No. 33:

All Concerned.—During the absence of Mr. L. B. Maggard on leave, effective March 6, 1913, Mr. C. W. Northrop is appointed acting chief dispatcher.

J. A. SMITH, General Superintendent.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The standing of the teams in the Isthmian Duckpin League on March 10, was, as follows:

Team.	Won.	Lost.	P. C.
Gorgona.....	3	0	1.000
Culebra.....	2	1	.666
Cristobal.....	2	1	.666
Empire.....	1	2	.333
Gatun.....	1	2	.333
Corozal.....	0	3	.000

The moving picture schedule for the coming week, March 17 to 22, is, as follows: Monday, Cristobal; Tuesday, Gorgona; Wednesday, Gatun; Thursday, Culebra; Friday, Empire; Saturday, Corozal; Friday, Porto Bello.

There will be an Isthmian wrestling contest held at the Gorgona clubhouse on April 12. Amateur rules will govern the contest. There will be two classes, the novice and the open.

COROZAL.

There will be a sacred concert by the members of the Edith Harris Scott concert party, at the clubhouse on Sunday night, March 16.

A temporary stage, formerly used at the Las Cascadas hall for minstrel shows, and other entertainments, will be moved to Corozal for use during the stay of the Tenth Infantry. It is planned to give a local entertainment during the stay of the soldiers.

Corozal lost three games to Gorgona on the local alleys, Saturday evening, March 8.

EMPIRE.

Culebra won two games out of three in the opening games of the Isthmian duckpin tournament. Scores:

Empire.	Culebra.
Pinney..... 82 82 92	Palmer..... 82 82 92
Potter..... 101 81 87	Steele..... 93 88 85
Gustavson..... 92 97 99	Brown..... 89 82 104
Gorham..... 85 90 92	Anderson..... 99 77 86
Henry..... 85 105 82	Kiernan..... 82 105 108

Totals.... 445 455 452 445 434 475

On Saturday, March 15, the Empire team will bowl Gatun, at Gatun.

The local tenpin bowling tournament, which will start during the week of March 10, has 25 men entered to date. They will be divided into teams of six men each. Medals will be given the winning team.

The March pool tournament will differ from the regular monthly tournament, in that each man will play each other man until a player loses three games, when he will be out of the tournament. Medals will be given for prizes. Twenty-nine men are registered in the gymnasium class with a regular attendance of 19. The class meets twice weekly. After the regular class work, the indoor baseball squad practices for the coming league. All are invited to join this class.

GORGONA.

Sunday evening, March 16, there will be an illustrated lecture on the life of Moses. Special music will be furnished.

The "Country School" entertainment will be given on Friday evening, March 14. It will open at 7.45.

The indoor baseball game between Gorgona and Camp Elliott resulted in a score of 9 to 11 in favor of Gorgona.

The following is the high scores in bowling for the week:

Dent, 102, 102, 105, 104, 113; Keppler, 101; Davis, 118; King, 109, 103; Seeb, 106, 101; Gebhardt, 103, 105; Lowe, 100; Ruchte, 112.

Culebra will bowl at Gorgona on Saturday evening, March 15. The public is invited.

Twenty new records were bought on Friday, all late music.

Twenty-two new books were added to the library last week.

CRISTOBAL.

The Edith Harris Scott Concert Company will play a return engagement at the Cristobal clubhouse on Friday night, March 14. Reserved seats will be on sale at the desk on March 12. Members free; nonmembers, 50 cents.

The gymnasium class, under the direction of Physical Director Schulte, is increasing in size. All members are urged to take advantage of this feature of clubhouse work.

The Isthmian duckpin tournament started with the Cristobal duckpin team, taking two out of three games from the Gatun team on the home alleys, on Saturday night, March 8. Team scores:

Cristobal.....	488 474 482
Gatun.....	436 491 412

PORTO BELLO.

Parties from Cristobal, Gatun, Culebra, and Empire spent Saturday and Sunday, February 22 and 23, at

Porto Bello, in boating, swimming, and exploring the rivers and forts. An informal dance was held Saturday evening, and on Sunday, a train took the visitors for a swim at Powder Beach. On Sunday evening, many attended the song service.

Mr. Porter F. Woolworth, physical director at the Gatun clubhouse, piloted a party of 25 Gatun boys to Porto Bello, on Saturday, March 1, to see the old ruins, and enjoy a swim in the sea.

A reception will be tendered Mr. and Mrs. Ad. Hoehne on Wednesday night, March 12. After luncheon, to be served by the Porto Bello ladies, they will be presented with a carving set.

Thirty-five of the new Y. M. C. A. hymn books for the Sunday night song service have been received.

After the entertainment given by the Edith Harris Scott Concert Company, on Saturday evening, March 8, a reception was tendered the members of the company, during which refreshments were served. Mrs. Scott was the first entertainer from the United States to give a concert at the Porto Bello clubhouse, when the building was opened three years ago.

On Sunday evening, March 9, the regular song service was led by Mr. McAfee of the Edith Harris Scott Concert Company. Miss Ruth Thoburn gave a violin solo, "Scotch lullaby," by Von Kunitz; Miss Lucille Miller sang two solos "I think when I read the sweet story of old," and "The rosary"; and Mrs. Scott, the "The last hymn." Mr. Case of Culebra, sang "The perfect day." Mrs. S. G. Allen was the piano accompanist.

Misdirected Letters.

ANCON, C. Z., March 12, 1913.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received at the office of the Director of Posts, and may be secured upon request of the addressees:

Abell, Albert	Lucas, Johan
Barker, S. N.	Matheson, Mrs. A. J.
Balnel, Emmanuel, B. 403	Miner, Mrs. Arthur
Burrows, Samuel	Mittinright, Joseph R.
Castro, Domingo	Moore, Miss Kathryn
Cunningham, S. A.	Nelson, Hans P.
Earl, John	Paris, B.
Emmons, Nye	Queeley, John T.
Fitzpatrick, W.	Reeve, A. B.
Goldberg, F.	Reisener, Waldo
Graff, Chas. H.	Rose, Charles
Grossberg, Arthur	Russell, John D.
Hall, Elliott L.	Rupp, Miss Meta N.
Hanlon, M. T.	Sapley, H. A.
Hans, J. Vander	Skinner, A. H.
Haussman, Mrs. Chas.	Slater, J. H.
Heissler, L. J.	Stafford, Mrs. Bertha
Hines, Mrs. W. J. (W. P.)	Stevens, Miss Helen C.
Hoke, Jacob	Thorp, Mrs. Dean
Holemlin, Miss Mamie	Walker, Richard H.
Jackson, W. T.	Williams, Mike
Katz, Mrs. Backy	

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending March 8:

Pastores, March 2, from New York, with 51 reels electric cable, 30 cases electrical machinery, for First Division; 217 bundles iron pipe, for Mechanical Division; 60 cases machinery, emergency dams; 400 coils steel wire, 48 kegs nails, 10 crates stove pipe, 44 crates fibre brushes, for stock.

Heredia, March 3, from New Orleans, with 5,225 pieces yellow pine lumber, for Mechanical Division; 150 cases fire brick, 1,863 bales hay; 162 pieces piling, 1,916 cross-ties, 1,316 pieces yellow pine lumber, for stock.

Prins August Wilhelm, March 3, from New York, with 66 cases machinery, for emergency dams; 20 kegs rivets, 210 kegs bolts, 6 cases paper, 50 cases metal paint, 49 pieces steel beams, for stock.

Aztec, March 3, from San Francisco, with 3 pieces spud timbers, for Sixth Division.

Eastwood, March 4, from New York, with 111 cases blasting caps, for stock; 120,980 bags cement, for Atlantic and Fifth Divisions.

Nicosian, March 4, from Liverpool, with 210 barrels carbonic acid, for stock; 7 pieces machinery, for Sixth Division.

Metapan, March 6, from New Orleans, with 36 pieces steel beams, 100 coils rope, 36 crates water closets, 1,115 pieces steel bars, 13 cases tape fuse, 8 cases hardware, for stock; 76 pieces structural steel, 20 cases castings, for First Division.

Atenas, March 6, from New Orleans, with 6,000 pieces lumber, 566 bundles castings, for Mechanical Division; 7,825 pieces lumber, 332 pieces cross-ties, 96 pieces piling, 300 cases fire brick, 200 drums kerosene, 500 cases kerosene, 440 cases grease, 415 drums engine oils, for stock.

Advance, March 7, from New York, with 142 barrels sand, 31 cases electric globes, 37 cases brake shoes, 18 cases fire brick, 10 reels wire, 196 packages car couplers, for Mechanical Division; 8 barrels batteries, 46 cases

signal material, 10 cases drinking cups, for Panama Railroad Company; 19 cases castings, for First Division; 41 rolls wire fencing, 50 cases lanterns, 350 packages garbage cans, 50 cases lye, 50 cases varnish, 2,501 bundles track spikes, 1,250 kegs tie plates, 327 pigs tin, 140 pieces oak lumber, 200 kegs paint, 334 bundles iron pipe, 94 pieces steel plates, 30 rolls cotton duck, for stock; and a miscellaneous cargo, the whole consisting of 6,320 packages, weighing 650 tons.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Changes in Cold Storage Price List.

The following changes have been made in the list of cold storage articles, as of March 11:

Eggs, reduced from 32 to 29 cents a dozen, 15 cents by the half-dozen.

Butter, creamery special, advanced from 40 to 42 cents a pound.

Cucumbers advanced from 14 to 18 cents a pound.

Rainfall from March 1 to 8, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	.43	4	.43
Balboa.....			
*Miraflores.....			
Pedro Miguel.....			
Rio Grande.....	.28	5	.28
<i>Central Section—</i>			
Culebra.....	.56	5	.56
*Canacho.....			
Empire.....	.20	5	.21
Gamboa.....			
*Juan Mina.....			
Alhajuela.....	.01	5	.01
*El Vigia.....	.02	5	.02
*Gorgona.....	.03	6	.03
*Frijoles.....			
*Trinidad.....	.32	5	.65
*Monte Lirio.....	.10	6	.10
<i>Atlantic Section—</i>			
Gatun.....	.09	2-8	.20
*Brazos Brook.....	.06	3	.10
Colon.....	.11	8	.17
†Porto Bello.....	.45	3	.59

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., March 7.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, March 8, 1913. All heights are in feet above mean sealevel:

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela	Gamboa.	Gatun Lake.
Sun., March 2.....	125.7	91.8	48.0	47.9
Mon., March 3.....	126.8	93.0	48.0	47.9
Tues., March 4.....	126.4	92.9	48.0	48.0
Wed., March 5.....	125.8	92.0	48.1	48.0
Thurs., March 6.....	125.9	92.0	48.1	48.1
Fri., March 7.....	125.7	91.8	48.1	48.1
Sat., March 8.....	125.7	91.8	48.1	48.1
Height of low water to nearest foot.....	125.0	91.0	44.0	

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending March 22, 1913, (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
March 16.....	3.10	9.10	3.33	9.35	
March 17.....	4.20	10.25	4.55	10.56	
March 18.....	5.37	11.52	6.18		
March 19.....	12.23	6.50	1.07	7.26	
March 20.....	1.34	7.53	2.08	8.23	
March 21.....	2.32	8.46	2.59	9.13	
March 22.....	3.22	9.35	3.45	10.00	

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday, and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 4.25 train at Panama.

JOINT LAND COMMISSION.

Notice to Persons Having Title or Claim to Canal Zone Lands.

Notice is hereby given to all land owners and land holders and to all persons having any title, claim, or interest in any land, or land under water, situated in any part of the Canal Zone, except in the region known as Las Sabanas, that it is the intention of the Government of the United States to acquire for its own use all land and land under water located within the area named.

By Act of Congress, approved August 24, 1912, it is provided:

"The President is authorized to declare by Executive Order that all land and land under water within the limits of the Canal Zone is necessary for the construction, maintenance, operation, sanitation, or protection of the Panama Canal, and to extinguish, by agreement, when advisable, all claims and titles of adverse claimants and occupants. Upon failure to secure by agreement title to any such parcel of land or land under water the adverse claim or occupancy shall be disposed of and title thereto secured in the United States and compensation therefor fixed and paid in the manner provided in the aforesaid Treaty with the Republic of Panama, or such modification of such Treaty as may hereafter be made."

By Executive Order, dated December 5, 1912, the President of the United States declared:

"That all land and land under water within the limits of the Canal Zone are necessary for the construction, maintenance, operation, protection, and sanitation of the Panama Canal," and in the same Order directed the Chairman of the Isthmian Canal Commission: "To take possession on behalf of the United States, of all such land and land under water."

By further Executive Order of February 18, 1913, the land situated within the area known as Las Sabanas was exempted from the operation of the Order of December 5, 1912. This area is more particularly described as follows:

"The said area being bounded on the south by the present limits of the city of Panama, on the southeast by the Pacific Ocean, on the northeast by the boundary line of the Canal Zone from monument 99 for a distance of four thousand seven hundred and forty-four and five-tenths (4,744-5/10) meters to monument marked "F," on the northwest by a line extending from said monument F south 63 degrees 32 minutes west for a distance of two thousand and eight and six-tenths (2,008-6/10) meters to the intersection of said line with the Curundú River, and on the west by the Curundú River from said point of intersection to the point where said river crosses the present boundary line of the city of Panama."

For the purpose of carrying out the Order of December 5, 1912, and, insofar as claims within the Canal Zone are not extinguished by agreement entered into directly by the said claimants with the Isthmian Canal Commission, recourse will be had to the procedure provided by Article 6 and 15 of the Treaty concluded November 18, 1903, between the United States of America and the Republic of Panama, which read, as follows:

"Article 6. The grants herein contained shall in no manner invalidate the titles or rights of private land holders or owners of private property in the said Zone or in or to any of the lands or waters granted to the United States by the provisions of any Article of this Treaty, nor shall they interfere with the rights of way over the public roads passing through the said Zone or over any of the said lands or waters unless said rights of way or private rights shall conflict with rights, herein granted to the United States, in which case the rights of the United States shall be superior. All damages caused to the owners of private lands or private property of any kind by reason of the grants contained in this Treaty, or by reason of the operations of the United States, its agents or employees, or by reason of the construction, maintenance, operation, sanitation and protection of the said Canal, or of the works of sanitation and protection herein provided for, shall be appraised and settled by a joint commission appointed by the Governments of the United States and the Republic of Panama, whose decisions as to such damages shall be final and whose awards as to such damages shall be paid solely by the United States. No part of the work on said Canal or the Panama railroad or on any auxiliary works relating thereto and authorized by the terms of this Treaty, shall be prevented, delayed or impeded by or pending such proceedings to ascertain such damages. The appraisal of said private lands and private property and the assessment of damages to them shall be based upon their value before the date of this convention.

"Article 15. The joint commission referred to in Article 6 shall be established, as follows:

The President of the United States shall nominate two persons and the President of the Republic of Panama shall nominate two persons and they shall pro-

ceed to a decision, but in case of disagreement of the commission (by reason of their being equally divided in conclusion) an umpire shall be appointed by the two Governments, who shall render the decision. In the event of the death, absence, or incapacity of a commissioner or umpire, or of his omitting, declining, or ceasing to act, his place shall be filled by the appointment of another person in the manner above indicated. All decisions by a majority of the commission or by the umpire shall be final."

All persons, therefore, having title or claim to, or interest in lands, or lands under water, situated in any part of the Canal Zone, except in the exempted area, or who have suffered damages of any kind by reason of the grants contained in the Treaty, or by reason of the operations of the United States, its agents or employees, or by reason of the construction, maintenance, operation, sanitation, or protection of the said Canal, shall file with the joint land commission, a statement of the entire extent of their property rights and interests. Such statement should include the name, residence, and postoffice address of the claimant, the amount of the claim, the location and extent of the property indicated, wherever practicable, by maps or drawings, the uses to which such property is put and a description of the improvements which have been made thereon, and should be accompanied by a statement of the title and rights of the claimant thereto, supported by all existing documentary proofs of title.

Statements referring to claims of ownership to land or land under water, together with accompanying documents, should be filed in FOUR copies, but of the legal documents submitted as proofs, one copy only need be attested. All other claims presented to the commission should be filed in at least two copies. All claims shall be submitted on a form supplied by the commission. Such statements of claim and all other forms required by the commission can be obtained on and after March 14, 1913, from the secretary of the commission, at the several police stations in the Canal Zone, or at the office of the secretary of the municipal council of the city of Panama.

The statements above described, to be presented by all claimants to private property, should be filed with the secretary of the joint land commission, National Palace, Panama, with as little delay as possible. Claimants to land located in the area between Gatun and Pedro Miguel should file their statements not later than March 31, 1913, and claimants to land located in the remainder of the Canal Zone should file their statements not later than April 15, 1913.

Failure on the part of claimants to file the required statement will not preclude the joint land commission from acting upon all cases properly coming before it, without the cooperation of the persons most directly interested.

After an examination of the papers filed with the joint land commission, an opportunity will be given to all claimants to present further evidence in public hearings. The joint land commission reserves the right to call upon claimants for further information and for documents supplementary to those filed with the original statement.

The commission will begin hearings upon claims which are ready for adjudication, relating to any lands, in the district between Gamboa and Gatun, excepting town sites, on Monday, March 17, 1913, in the Assembly Hall, National Palace, Panama. Due notice of further hearings will be given from time to time.

Proceedings before the commission may be instituted by the claimant in person, or through his or her attorney in fact or agent. If the claimant is represented by an attorney in fact or agent, a written declaration designating the person to represent the claimant must be filed with the secretary of the joint land commission. Claimants presenting such a declaration in person should sign the same in the presence of the secretary. In case such declarations are not presented in person, the signature of the claimant should be attested in the Republic of Panama by a municipal official, or in the Canal Zone by the agent in charge of any police station. Forms for the designation of attorneys or agents can be obtained from the secretary of the commission, and within the Canal Zone, at the several police stations, and at the office of the secretary of the municipal council of the city of Panama.

All documents required by the commission, as well as proceedings before the commission, may be in either Spanish or English.

By order of the joint land commission.

J. C. LUTWIELER, Secretary.
Panama, R. P., March 8, 1913.

FOUND—A sum of money on the steps of the Gatun clubhouse, on Sunday, February 23. Owner can obtain same by applying to Mr. P. T. Woolworth, assistant secretary at Gatun clubhouse, and describing property.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Allianca.....	P. R. R. Wednesday..	Mar. 12
Colon.....	P. R. R. Tuesday.....	Mar. 18
Advance.....	P. R. R. Tuesday.....	Mar. 25
Panama.....	P. R. R. Monday.....	Mar. 31
Allianca.....	P. R. R. Saturday.....	Apr. 5
Colon.....	P. R. R. Saturday.....	Apr. 12
Advance.....	P. R. R. Saturday.....	Apr. 19
Panama.....	P. R. R. Friday.....	Apr. 25
Allianca.....	P. R. R. Thursday.....	May 1

CRISTOBAL TO NEW YORK.

Advance.....	P. R. R. Wednesday..	Mar. 12
Panama.....	P. R. R. Tuesday.....	Mar. 18
Allianca.....	P. R. R. Monday.....	Mar. 24
Colon.....	P. R. R. Sunday.....	Mar. 30
Advance.....	P. R. R. Monday.....	Apr. 7
Panama.....	P. R. R. Saturday.....	Apr. 12
Allianca.....	P. R. R. Friday.....	Apr. 18
Colon.....	P. R. R. Thursday.....	Apr. 24
Advance.....	P. R. R. Thursday.....	May 1

NEW YORK TO COLON.

Zacapa.....	U. F. C. Wednesday..	Mar. 5
Prinz Joachim.....	H.-A. Saturday.....	Mar. 8
Sixaola.....	U. F. C. Saturday.....	Mar. 8
Almirante.....	U. F. C. Wednesday..	Mar. 12
Prinz Eitel Friedrich..	H.-A. Saturday.....	Mar. 15
Oruba.....	R.-M. Saturday.....	Mar. 15
Carrillo.....	U. F. C. Saturday.....	Mar. 15
Santa Marta.....	U. F. C. Wednesday..	Mar. 19
Prinz August Wilhelm..	H.-A. Saturday.....	Mar. 22
Pastores.....	U. F. C. Saturday.....	Mar. 22
Metapan.....	U. F. C. Wednesday..	Mar. 26

COLON TO NEW YORK.

Metapan.....	U. F. C. Thursday.....	Mar. 13
Prinz Sigismund.....	H.-A. Monday.....	Mar. 17
Tivives.....	U. F. C. Tuesday.....	Mar. 18
Clyde.....	R.-M. Tuesday.....	Mar. 18
Zacapa.....	U. F. C. Thursday.....	Mar. 20
Prinz Joachim.....	H.-A. Tuesday.....	Mar. 25
Sixaola.....	U. F. C. Tuesday.....	Mar. 25
Almirante.....	U. F. C. Thursday.....	Mar. 27

NEW ORLEANS TO COLON.

Turrialba.....	U. F. C. Saturday.....	Mar. 8
Cartago.....	U. F. C. Wednesday..	Mar. 12
Abangarez.....	U. F. C. Saturday.....	Mar. 15
Heredia.....	U. F. C. Wednesday..	Mar. 19
Atenas.....	U. F. C. Saturday.....	Mar. 22
Parismina.....	U. F. C. Wednesday..	Mar. 26
Turrialba.....	U. F. C. Saturday.....	Mar. 29

COLON TO NEW ORLEANS.

Atéhas.....	U. F. C. Thursday.....	Mar. 13
Parismina.....	U. F. C. Saturday.....	Mar. 15
Turrialba.....	U. F. C. Thursday.....	Mar. 20
Cartago.....	U. F. C. Saturday.....	Mar. 22
Abangarez.....	U. F. C. Thursday.....	Mar. 27
Heredia.....	U. F. C. Saturday.....	Mar. 29
Atenas.....	U. F. C. Thursday.....	April 3

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

Hamburg-American steamers for New York, via Kingston and Santiago de Cuba, sail thus: the *Prinz Joachim* and the *Prinz August Wilhelm* on alternate Tuesdays at 10 a. m., and the *Prinz Sigismund* and the *Prinz Eitel Friedrich* on alternate Mondays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays, at 3 p. m., ships for New York via Kingston, on Tuesdays, at 2 p. m. and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct, Tuesdays at 3 p. m.

The Panamanian Steamship Company's steamer Panama will sail from Panama for Aguadulce and Pedregal (Boquete) on March 19.

The following ships arrived at, or departed from, the port of Balboa during the week ending March 8:

Arrivals—March 2, *Asteo*, from San Francisco; March 3, *Guatemala*, from Callao; March 4, *Quito*, from Guayaquil; March 4, *Arica*, from Buenaventura; March 4, *Peru*, from Guayaquil; March 7, *Morales* (Mexican warship), from Mexico.

Departures—March 3, *San Juan*, to San Francisco; March 3, *Palena*, to Valparaiso; March 3, *Urubamba*, to Valparaiso; March 8, *Lewis Luckenbach*, to San Francisco.

CANAL



RECORD

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The Canal Record

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Address all Communications,
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Advance in Lock Gate Construction.

With the completion of the skeleton of the lower gate in the east chamber of the middle lock at Gatun on March 13, all the gates there were brought to their full height. The remainder of the work on them will be sheathing, riveting, and finishing. Seven of the 20 gates in Gatun Locks are practically completed.

Work will be pushed on the lower guard gates and the gates in the west chambers, in order to have all the gates on one side of the locks completed as soon as possible. This will make possible the passage of ships before all gates are completed, as the other side of the locks can be kept dry. The same plan is being followed at Pedro Miguel and Miraflores locks, and it is expected all gates in the west chambers will be completed by October 1, 1913.

New Movement in Break on East Bank at Culebra.

On the night of March 12-13, the break on the east bank of the Canal, opposite Culebra, which first moved into the Canal on the night of February 5, again made another rapid movement downward and toward the Canal. The bottom of the Canal, near the center, was heaved up for a distance of about 1,000 feet, and to a maximum vertical height of about 30 feet, destroying five tracks in the bottom of the Canal, overturning steamshovel No. 220, and partly tipping over steamshovel No. 205. Only one track remained in commission after the break had ceased moving, but a second one has since been connected, so that there are now two tracks in use on the west side of the Canal.

Two steamshovels were set to work at once removing that part of the slide which had heaved up at the bottom, and satisfactory communication was again restored on Monday, March 17.

Agricultural and Building Lot Leases.

In furtherance of the Executive Order of December 5, 1912, in which the President declared "That all lands and lands under water

within the limits of the Canal Zone are necessary for the construction, maintenance, operation, protection, and sanitation of the Panama Canal," and directed the Chairman to take possession of such land and extinguish titles, the Department of Law will proceed to cancel all unexpired agricultural and building lot leases in the Canal Zone. No rent thereon will be collected after March 31, 1913.

Formal Opening of Hotel Washington.

The Hotel Washington, in Colon, will be formally opened to the traveling public on Sunday, March 23, on which date all *a la carte* service in the present Washington House will be discontinued.

Work on Permanent Administration Building.

Bids were opened in Washington on March 6, under circular No. 760, for the fabrication and erection of the structural steel framework required in the construction of the permanent Administration Building, which will be situated on a knoll, west of Ancon Hill, overlooking the new Balboa townsite. Award for the material, and its erection, has been made to the United States Steel Products Company, who have agreed to begin work in 105 days, and to complete the contract in 180 days. About 1,250 tons of steel will be used in the framework of the building.

The work of preparing the site and placing the foundations for the structure has already been begun, and will be hastened as much as possible, in order to have everything ready for the steel contractors by July 1. It will be in charge of the Fifth Division of the Chief Engineer's office, and the Ancon quarry force will be used in the operations to some extent.

Sosa Rock for Paving Gatun Dam.

The borrow pit near Quebrancha Siding, two miles north of Monte Lirio and five and a half miles south of Gatun, was closed down on March 12, after two months' operations. During this time, about 14,000 cubic yards of basaltic rock were excavated and placed on Gatun Dam, for paving the lake side ten feet above and below the normal lake level. About 60,000 cubic yards yet required will be taken from the Balboa terminal excavation at Sosa Hills, which rock would otherwise have been wasted. The rock used for this paving is a hard, blue basalt, specimens of which have been examined by the Commission geologist, and found to be satisfactory for the purpose.

Tug "Bolivar" Out of Service.

The Panama railroad tug *Bolivar*, in use at the Balboa port terminal for many years, has been retired from service. It was built in 1885 by the firm of Neafie and Levy of Philadelphia, now out of existence, and came around South America under its own steam. It has a length of 127 feet, beam of 23 feet, depth of 9.5 feet, and cost \$52,000. It has been in constant use since it was built. In

1901, it was thoroughly overhauled, and part of its hull, frames, and deckhouse were rebuilt. At the same time, a new boiler was installed, and its engines renovated. In 1906, another new boiler was installed. The tug is fitted with an upper passenger deck, with a sun deck over it, and has been used for the transfer of passengers, in towing, etc. It will be out of service, pending its final disposition.

Dynamite for Canal Work.

Bids were opened in Washington on February 26, under circular 761, for an additional supply of dynamite to meet the requirements of the Canal work up to July 1, 1913. The Keystone National Powder Company was the lowest bidder, and was awarded the contract for supplying 550,000 pounds of 45 per cent dynamite, 1½ by 8-inch cartridges; 300,000 pounds of 60 per cent dynamite, 1½ by 8-inch cartridges, and 125,000 pounds of 60 per cent dynamite, 2 by 8-inch cartridges, based upon a price of \$11.25 per 100 pounds on the 45 per cent dynamite, and \$12.45 per 100 pounds on the 60 per cent dynamite. The present contract with the same firm is on the basis of \$11.30 per 100 pounds for the 45 per cent, and \$12.50 per 100 pounds on the 60 per cent dynamite.

Reorganization at Balboa Wharves.

Since January 1, when the Quartermaster's Department took over the cargo-handling operations at the Balboa agency of the Panama Railroad Company, a number of changes have been instituted for facilitating the work. Effective January 16, a regular day and night force was established, each with day and night foremen and checkers. Regular gangs have been organized, numbered, and assigned to these several foremen. Foremen are required to keep their own time books, and to distribute their labor for costkeeping purposes. One extragang has been formed, and placed under the control of the chief stevedore. A 9-hour working day has superseded the former 10-hour working day. The working day now begins at 7, instead of 6 a. m. The night force formerly stopped work at 5 a. m., and, as only an hour intervened before the resumption of work by the day force, it was difficult for the yardmaster to make the switch. The results, so far, show that the men are doing about as much work under the present schedule, as during the 10-hour day. Ships were formerly worked a part of the night, or from 8 to 11 p. m., or when they worked all night, the hours were from 8 p. m. to 12 midnight, and from 1 to 5 a. m. The custom of working the men from 8 to 11 p. m. has been abolished, and the unloading of vessels is carried on all night, or no night work is done. The rate of pay for the day men is 11 cents gold per hour, as compared with 12 cents paid by the contractors. The office hours of the Balboa agency, formerly 8 to 11 a. m.,

and from 1 to 5 p. m., have been changed to 7 to 11 a. m., and from 1 to 5 p. m., in keeping with the hours in force at the other offices in Balboa. So far, there has been plenty of labor available, and when any temporary shortage develops, the vacancies will be filled from the district quartermaster's utility gangs at Ancon and Balboa stores. An improvement has been made with reference to the quantity of short-shipped cargo left on the docks, some of which, previous to its shipment to destination had been on the docks for from 30 days to eight months. Practically all of this old cargo had been cleared up on March 1.

Cost of operation has been materially re-

duced. The cost per ton for handling cargo at Balboa docks for the calendar year 1912, was \$0.3647; for the month of January, \$0.3244; for the month of February \$0.2740.

A number of changes have been made in the office personnel. Mr. Harry Wilson, chief clerk, and Mr. T. C. Clark, wharf superintendent, have resigned. Mr. C. H. Mann has been appointed receiving and forwarding agent.

Visiting Congressmen.

Fourteen members of the House of Representatives arrived on the Isthmus, on the *Panama*, on March 12, on a tour of inspection of the Canal. The party was composed

of the following: Charles W. Bell, and son; Julius Kahn, Mrs. Kahn and two sons; William Kent, Mrs. Kent and three sons, California; James A. Frear, and Mrs. Frear; I. L. Lenroot, Mrs. Lenroot and son; John M. Nelson, and Mrs. Nelson, Wisconsin; Fred A. Britton, and Mrs. Britton, Illinois; L. C. Dyer, Mrs. Dyer, Miss Martha Dyer, and Miss Catherine Dyer, Missouri; Robert H. Gittins, Mrs. Gittins, and Miss Clara M. Gittins, New York; Edwin S. Underhill, Mrs. Underhill and son, New York; Charles E. Patton, and Mrs. Patton, Pennsylvania; Charles R. Davis, and Mrs. Davis; and Sydney Anderson, Minnesota; P. D. Norton, North Dakota.

In addition to the above, there arrived on the *Ancon*, on March 16, Representative George F. O'Shaunessy, and Mrs. O'Shaunessy of Rhode Island; and Carl Hayden and Mrs. Hayden of Arizona; and the *Alliance*, on March 19, Senator Porter J. McCumber of North Dakota, accompanied by his secretary; Representative William E. Cox, and Mrs. Cox of Indiana; David J. Lewis, and Mrs. Lewis of Maryland; D. J. O'Leary, and Mrs. O'Leary of New York, S. D. Fess, and son.

Examinations by Board of Local Inspectors.

Examinations for pilots, masters, mates, engineers, chauffeurs, and navigators of motor boats, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on Wednesday, March 26, 1913, beginning promptly at 8 a. m. All applicants for licenses must procure from the Executive Office, Ancon, forms of application and information respecting the filling out of same, not later than the day previous to the examination. In addition, all persons desiring chauffeurs' licenses must provide themselves with automobiles with which to demonstrate their ability to operate same.

Knights of Columbus Meeting.

All members of the Knights of Columbus that are interested in the forming of the new council at Cristobal are requested to attend the meeting on Sunday, March 30, in the lodge hall, building No. 1, Cristobal. Nominations of officers will take place at this meeting.

Sailing of the "Ancon."

The sailing date of the steamship *Ancon* has been set for Wednesday, March 26, at 3 p. m., from pier 11, Cristobal.

CONCRETE WORK IN THE LOCKS AND SPILLWAYS.

Over 98 per cent of the total of 4,446,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on March 15, the amount in place being 4,382,661 cubic yards.

GATUN LOCKS AND SPILLWAY.

Over 97 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on March 15, being 1,986,905 cubic yards, out of a total of 2,043,730. In the spillway of Gatun Dam there had been placed 221,314 cubic yards out of a total of 225,000 cubic yards. A statement of the amount placed each working day of the week ending March 15, and of the total, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			Large stone.	Total.	SPILLWAY.		
	Concrete placed.	Hours worked.	No. of mixer.			Concrete laid	Hours worked	No mixers used.
	Cu. Yds.					Cu. Yds.	Cu. Yds.	Cu. Yds.
March 10.....	1,504	25.08	4	.....	1,504	138	7 25	2
March 11.....	1,794	29.90	4	.....	1,794	95	6 00	1
March 12.....	1,146	19.10	4	.....	1,146	170	7 50	1
March 13.....	1,300	21.68	4	.....	1,300	164	7 50	2
March 14.....	1,248	20.80	4	.....	1,248	134	6 50	1
March 15.....	1,160	19.32	.....	.....	1,160	93	5 50	1
Total.....	8,152	135.88	4	.....	8,152	794	40 25	
Previously reported.....				.....	1,978,753	220,520		
Grand total.....				.....	1,986,905	221,314		

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 915,842 cubic yards, having been placed at the close of work on March 15. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed	Hours worked.	No. of mixer.	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.
March 10.....				215	18.00	2	12		227
March 11.....				216	17.50	2	7		223
March 12.....				102	8.00	1	7		109
March 13.....				218	18.00	2	8		226
March 14.....				199	16.50	2	11		210
March 15.....				156	13.50	2	6		162
Total				1,106	91.50	1.83	51		1,157
Previously reported.....								4,493	914,685
Grand total.....								4,493	915,842

MIRAFLORES LOCKS AND SPILLWAY.

About 99 per cent of the concrete for the system of two twin locks at Miraflores was in place on March 15, the total amount on that date being 1,479,914 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 1-cubic yard mixers.			Mixed by hand.	Large stone.	Total.	SPILLWAY. AUXILIARY PLANT.						Total.
										1-cubic yard mixers.			½-cubic yard mixers.			
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers				Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	
March 10.....	Cu. Yds. 972	33.67	8	Cu. Yds. 71	9.00	1	Cu. Yds.	Cu. Yds.	Cu. Yds. 1,043	Cu. Yds. 248	13.00	2	Cu. Yds. 61	5.00	1	Cu. Yds. 489
March 11.....	954	33.33	8	69	9.00	1	.....	.....	1,023	261	12.00	2	.....	.....	.....	457
March 12.....	772	32.17	6	90	13.00	2	.....	.....	862	200	9.50	2	27	4.50	1	507
March 13.....	912	34.00	8	72	10.00	2	.....	.....	984	248	12.50	2	57	8.00	1	533
March 14.....	716	29.58	7	99	15.00	2	.....	.....	815	205	11.00	2	.....	.....	.....	405
March 15.....	616	26.67	6	112	17.00	2	.....	.....	728	255	14.00	2	.....	.....	.....	535
Total.....	4 942	189.42	7.17	513	73.00	1.67	.....	.....	5 455	1,417	72.00	2	145	17.50	.5	*2,926
Previously reported.....							.....	3,693	1,474,459	.....	.....	.....	.....	.....	.....	9,393
Grand total.....							.....	3,693	1,479,914	.....	.....	.....	.....	.....	.....	12,319

*Includes 1,364 cubic yards laid by the Miraflores Locks construction plant—2 cubic-yard mixers.

EASTER IN ZONE CHURCHES.

Special Services Will be Held by Many of the Churches and Sunday Schools.

Easter Sunday, March 23, will be observed by special services in the churches of the Canal Zone, and in some instances, musical programs have been arranged. The Sunday schools will contribute their share to the celebration of the day, and throughout the following week, the services conducted by the Commission chaplains in the various villages will partake of the Easter spirit.

EPISCOPAL CHURCHES — GOOD FRIDAY AND EASTER.

At Christ Church, Colon, there will be the usual Good Friday service in the morning at 10.30 o'clock, followed by the three hour service, from 12 to 3 p. m. In the evening, the story of the Cross will be shown in a series of stereopticon views. On Easter Sunday, there will be celebrations of the Holy Communion at 5.30 and 7.30 a. m.; divine service at 10.30 a. m.; choral vespers, with sermon, at 4 p. m., and evensong at 7.30 p. m.

At St. Mary's, Empire, there will be service on Good Friday at 10.45 a. m. On Easter Sunday, there will be service, with special music, at 10.45 a. m.

On Good Friday, there will be service at St. Luke's Hospital Chapel, Ancon, at 10 a. m. On Easter Sunday, there will be a celebration of the Holy Communion at 7 a. m., and second celebration, with sermon, by the Rt. Rev. Albion W. Knight, the Bishop of Cuba.

The various Episcopal churches for West Indians throughout the Canal Zone will celebrate Good Friday and Easter Day with appropriate services, and programs of music will be given.

ROMAN CATHOLIC CHURCHES.

In the Roman Catholic churches at Culebra, Empire, Gorgona, and Gatun, there will be services on Good Friday, Easter Eve, and Easter Day, beginning with the celebration of mass in the morning and ending with benediction in the evening.

A Commission brake will run from Culebra to Empire on Easter morning, leaving Culebra at 10.30 o'clock, and returning after the service, for the convenience of those wishing to attend the services at St. Mary's Church.

OTHER CHURCHES AND SUNDAY SCHOOLS.

Some of the congregations of the Union churches, with their Sunday schools, will celebrate according to the following program:

The Union Church Sunday school, Cristobal, will hold appropriate exercises at 10 a. m. The Easter service, with a sermon by Chaplain C. H. Elliott on "The Risen Christ," will be at 7.45 p. m. Special music will be given by a quartet composed of Mrs. Lynn, Mrs. Butters, and Messrs. Butters and Bennyhoff, with Mrs. Harry Clark, accompanist.

At Gatun, the morning service will be held in the Commission chapel at 10.30 o'clock, with special music and a sermon by Chaplain Charles O. Purdy. In the evening, a concert will be given under the auspices of the ladies' auxiliary to the Christian League. The program will be, as follows: Voluntary, piano, by Mrs. Gilbert; hymn, "Now the day is over," Mrs. Palm and chorus; hymn, "Low in the grave He lay," chorus; trio, "My God and Father," women's voices; vocal solo, Mrs. Purdy, assisted by the chorus; trio,

"Father take my hand," Mrs. McFarland and choir; solo, Mr. Ourand; ten minute address by the chaplain; offertory, piano solo, Mrs. Gilbert; quartet, "Draw me to Thee," Mrs. McFarland, Mrs. Purdy, Messrs. Arthur and Ourand; chorus, "Song of triumph," piano solo, Mrs. Gilbert; vocal solo, Mrs. Logan; anthem, "Awakened Lord," chorus. The league chorus is composed of the following ladies and gentlemen: Soprano, Mrs. McFarland, Mrs. Logan, Mrs. Smith, Mrs. Duckworth, Mrs. Palm; altos, Mrs. Purdy, and Mrs. Cooper; tenors, Mr. Mitchell and Mr. Arthur; basses, Mr. Gilbert, Mr. Ourand, C. Dewy, and William Dewy.

At Gorgona, a simple program will be carried out by the children of the Sunday school, at the regular morning session.

The Empire Sunday school will present a double commemoration program in the morning at 9.30 o'clock, the day being the one-hundredth anniversary of the birth of the missionary explorer of Africa, David Livingstone, as well as Easter Day. A program has been arranged for churches throughout the Christian world, and this will be used in the Empire school, with some slight variations. An orchestra of seven pieces will play. A feature of the program will be the unveiling by a member of the school of a portrait of Livingston, which will have a permanent place in the chapel. The Easter service of the Christian League will be held immediately following the school exercises. Chaplain Nellis will preach. There will be special music, assisted by the orchestra.

An Easter service, with sermon, will be held at Culebra in the evening at 7.30 o'clock.

At the Methodist church in Panama, there will be a short exercise by the children of the Sunday school, consisting of processions, songs, and Easter carols, which will take the place of the regular lesson period. The Easter service will follow.

On Good Friday, there will be a baptism at the mission Baptist Church in Culebra, at 6.30 a. m.

Easter services will be held on Sunday in all the missions of the Baptist church in the Canal Zone.

Panama Baptists to Have New Building.

The Baptist Church in the district of Guachapali, Panama, constructed in 1908, is to be replaced by a new building, the present one being inadequate for the growing needs of the congregation. It is proposed to erect a \$3,000 building containing an auditorium and baptistery on the first floor, with a Sunday school room above. The present congregation numbers 400, and the Sunday school has an enrollment of 200. The work of this church was established five years ago and has steadily grown since that time.

Bishop Knight's Visitations.

The following itinerary has been arranged for the visitations of Bishop Albion W. Knight, who is expected to arrive at Colon on the steamship *Evangeline* on Saturday, March 22:

Easter Sunday, March 23—Celebration of the Holy Communion in the chapel at Culebra at 7 a. m.; at St. Luke's Hospital chapel, Ancon, at 10 a. m.; at St. Paul's, Panama, at 7.30 p. m.; Monday evening, March 24, at St. Augustine's, Paraiso; Tuesday evening, March 25, at St. Michael's, Pedro Miguel; Wednesday evening, March 26, at St. Phil-

ip's, Las Cascadas; Thursday evening, March 27, at St. James, Empire; Friday evening, March 28, at St. Mary's, Empire; Saturday, March 29, conference of clergy and catechists at St. Mary's Church, Empire, at 8 a. m.; Sunday morning, March 30, at St. Mark's, Culebra; at St. Stephen's, New Gatun, at 3.30 p. m.; at Christ Church, Colon Beach, at 7.30 p. m.; Monday, March 31, at St. Andrew's, Gorgona, at 7.30 p. m.

Bishop Knight will leave the Isthmus on Tuesday, April 1.

School Notes.

The Canal Zone schools are closed this week for the Easter holidays, and will reopen on Monday, March 31.

At the monthly meeting of the white teachers at Ancon schoolhouse on March 8, an address on the geology of the Isthmus was made by Mr. D. F. McDonald, Commission geologist at Culebra.

During the past two months the Division of Schools has received an average of five applications daily for positions as teachers in the white schools. About 1,500 such applications are now on file; as many as 500 of these are from teachers who are graduates of normal schools or universities, who have had at least the required two years of experience, and all highly recommended. This condition affords unusual opportunities of selection, and it is the intention of the superintendent of schools to appoint only those who have the highest qualifications.

PERSONAL.

The nomination of Col. Carroll A. Devol to be brigadier-general in the United States Army was confirmed by the Senate on March 3.

Gen. S. M. B. Young was a passenger on the *Panama*, which arrived at Cristobal on March 12. Lieut.-Col. William V. Judson, formerly engineer-commissioner of the District of Columbia, accompanied by Mrs. Judson, arrived on the *Ancon*, on March 16.

Civil Service Examinations.

Examinations will be held, probably on April 27, for the positions of stenographer and typewriter, Isthmian Canal Service; stenographer and typewriter, Philippine Service; and typewriter, Isthmian Canal Service. Applications will not be received after April 5; this date may be changed if necessary. Persons interested should request a copy of Form 1424, which contains information in regard to the abovenamed examinations.

Competitors in the abovenamed examinations must bring their own typewriting machines to the examination room.

The examinations will be held in the Commission clubhouse at Empire, but the place and date should be omitted in applications.

A card of admission will be sent just before the examination to those found eligible to be admitted.

In answer to questions as to residence, applicants must show residence in a State or Territory of the United States, and county thereof, up to the time of filing application.

ISTHMIAN CIVIL SERVICE BOARD.

Culebra, C. Z., March 17, 1913.

The following officers were chosen at the annual election of the Canal Zone Medical Society, held on March 15: President, Dr. William M. James, Ancon; vice-president, Dr. Lewis B. Bates, Ancon; secretary and treasurer, Dr. D. F. Reeder, Ancon.

ANCON AND BALBOA ROADS.

Maintenance and Construction of Highways Between Terminal Towns.

The Zone Line road between Ancon post-office and the Panama-Balboa road is being resurfaced, and the Panama-Balboa road has been resurfaced from its junction with the Zone Line road to the iron bridge spanning an estuary north of the Balboa hotel. The work of resurfacing involves ploughing the road with a heavy metal plough drawn by a road roller and laying on this, as a grade base, a new macadam surface. No. 2 rock is spread in a layer four inches thick, rolled slightly and treated with oil, one gallon to the square yard; screenings are spread on this, sprinkled with crude oil, and rolled; and a top of dry screenings is thoroughly rolled, to absorb the oil and form a spongy, elastic surface. When properly laid such road is smooth and firm, resembling asphalt, and almost dustless.

The Zone Line road does not follow the boundary closely between Ancon postoffice and its junction, at the foot of the hill on which the Hotel Tivoli stands, with the road skirting De Lesseps Plaza. Through part of this distance, from the animal hospital at the old corral to the foot of the hill, it is being relocated slightly to the east, and exactly along the boundary line. In its new location the road will border the lot on which President Porras of Panama is building his residence, and it is largely as a courtesy to him that the line is being changed and the grade reduced from approximately $7\frac{1}{2}$ to six per cent. The new road crosses the site of the old animal hospital, which has been removed.

Beyond the bridge north of the Balboa hotel, the road, as built at present, skirts Sosa Hills on the east and north on its way to the wharves at Balboa. In so doing it passes into the midst of the projected terminal buildings and a number of railway tracks. It is proposed to construct a more direct route from the bridge around the other side of the hills, crossing the dumps, and passing by the Commission electric plant in a route approximately parallel to that of the street railway line to Balboa. This project is still under advisement; and, in any event, the present road would be maintained for its usefulness about the terminals.

Connecting with this road, a road is projected to El Diablo, across fill to be made in the rear of the new piers. Plans for this have not been determined, other than that it would connect near El Diablo with the road which is being constructed from that point to Ancon, parallel to the main line of the Panama railroad into Panama. In this work the grade cuts and embankments have been completed from El Diablo crossing to the point at which the embankment of the old Panama railroad joins that of the relocated line. Over this length it rests on the old embankment; the rest of the way to the point at which it will cross the railroad, a hundred yards south of Balboa Junction, it will be built partly on natural earth and partly on fill. One 4-by-4 foot concrete culvert has been constructed, and a 20-foot bridge will be built across the Curundú River, near Bridge 65 of the Panama railroad. The grade embankment will be completed over practically the entire length before the macadamizing is begun. The labor force on this highway consists of prisoners from Ancon judicial district; 40 are engaged in actual construction, and four in work about the mess

and barracks at Corozal. It is anticipated that this road will be opened for use within four months.

Fires.

Sparks from a locomotive set fire to a lumber pile north of the Balboa wharves on Sunday, March 16, about 2.20 p. m.. The heat burst a 4-inch oil pipe belonging to the Panama Railroad Company, and the burning

oil flowed along a drain igniting a number of box cars in places. The damage to lumber etc., amounted to about \$200.

A Panama railroad box car standing in the yard at Miraflores, containing empty cement sacks, was discovered to be on fire at about 11.40 p. m., on Saturday, March 15. The upper part of the car was destroyed, and the flooring and sills were partly burned.

LABOR FORCE AND QUARTERS IN FEBRUARY.

The total force at work on the Canal and the Panama railroad on February 26, was 38,299. Of this number, 26,912 were employed on the Canal by the Commission. 5,112 composed the contractors' forces, and 6,275 were in the service of the Panama railroad. The gold force on the Canal work, composed almost exclusively of white Americans, numbered 4,484, a decrease of 17, as compared with the previous month. The total Government force was, as follows:

DEPARTMENT OR DIVISION.	SILVER EMPLOYEES*										Total silver.	Total gold.	Grand total.		
	Artisans.					European laborers.		West Indian laborers.							
	Monthly	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.					
Construction and Engineering	4,272	9	10	294	1,089	4,197	3,495	936	114	406	5,665	2,783	23,270	3,405	26,675
Civil Administration	151			2	3	26						17	199	339	538
Sanitation	671				3	3				1	74	263	1,011	360	1,378
Quartermaster's	873			156	130	15	32	4	28		150	723	2,111	177	2,288
Subsistence	891			2		2						25	920	53	973
Disbursements	7												7	24	31
Examination of Accounts	15												15	126	141
Total.	6,886	9	10	157	1,225	4,243	3,52	940	14	407	5,889	†3,811	27,540	4,484	32,024
Month previous	6,717	10	10	36	1,186	4,091	3,64	996	15	449	5,572	†3,340	26,514	4,501	31,015

Panama railroad force, 5,061; Panama railroad commissary force, 1,214. Total, 6,275. Grand total, 38,299
*All wages specified are in gold. †Includes 267 at 7 cents, and fourteen at 5 cents. ‡Includes 222 at 7 cents and seven at 5 cents.

The force report of the Department of Construction and Engineering, including the employes of contractors, as of February 26 was, as follows:

DIVISION.	SILVER EMPLOYES*												Total silver.	Total gold.	Grand total.
	Artisans.					European laborers.		West Indian laborers.							
	Monthly	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.			
Chief Engineer.....	1,689	5	2	163	613	2,403	1,291	570	26	3	3,054	686	10,499	1,474	11,973
Mechanical Division.....	253	5	2	21	6	3	9	55	2	..	1,031	84	1,907	794	2,701
Atlantic Division.....	1,317	4	..	90	284	935	666	269	..	33	744	166	4,511	551	5,062
Central Division.....	1,013	..	..	20	125	470	1,483	95	88	370	840	1,847	6,353	586	6,939
Pacific Division.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
U. S. Steel Products Co.....	..	..	..	..	..	..	..	..	..	..	..	..	15	4	19
Chicago House Wrecking Co.....	..	..	..	..	..	..	..	..	..	..	..	..	96	97	193
McClintic - Marshall Co.....	..	..	..	..	..	..	..	..	..	..	..	..	4,356	544	4,900
Total.....	4,272	9	10	294	1,089	4,197	3,49	936	114	406	5,66	†2,783	27,737	4,048	31,787
Month previous...	4,261	10	10	278	1,045	4,050	3,61	983	124	348	5,31	†2,409	26,746	4,025	30,771

*All wages specified are in gold. †Includes 228 at seven cents and three at 5 cents. ‡Includes 213 at seven cents and one at 5 cents.

A report of Commission quarters occupied on February 26, follows:

PLACE.	Gold.			Europeans.			West Indians.		
	Men	Women	Children	Men	Women	Children	Men	Women	Children
Balboa	236	35	37	389			561		
Ancon	518	309	218	12			1,019	4	
Corozal	599	96	94	382			480	5	5
Pedro Miguel	22	2	3	645	3	10	235	5	4
Miraflores	360	74	81	334	3	2	315	38	37
Paraiso	314	81	80	179	3	11	227	10	159
Culebra	357	175	165	452	43	84	384	110	166
Empire	519	316	292	427	56	77	481	144	220
Las Cascadas	176	105	112	41	17	29	240	170	148
Bas Obispo	77	53	40	108	23	37	146	52	73
Gorgona	716	240	294	75	5	12	260	88	153
Gatun	960	207	200	1,254	20	30	1,026	30	45
Cristobal	799	286	290	149			1,354	227	357
Toro Point	62	14	16	80			301		
Porto Bello	62	30	33	84			231	1	1
Total	5,777	2,023	1,955	4,611	173	29	7,260	980	1,368

(1) Includes Sabanas police station, Taboga Island, Culebra Island, Palo Seco and Naos Island. (2) Includes Europeans and Asiatics (3) Includes 75 Panamanians. (4) Includes 31 East Indians. (5) Includes 102 Panamanians. (6) Includes Matachin. (7) Includes Colon Hospital. (8) Includes four Asiatics. Included in the above are 47 families, and 614 bachelors, belonging to the gold force of contractors.

LOCK MATERIAL CONTRACTS.

Deliveries Well Advanced, on March 1, on Nearly All Large Orders.

Out of a total of 153 contracts for structural material, machinery, valves, etc., including one for 39 towing locomotives let conditionally and pending trial of sample, for the locks and spillways of the Canal, under the First Division of the Chief Engineer's office, the erection or installation of which, on the Isthmus, is being performed by the Canal Commission, deliveries had been entirely completed on 102, on March 1.

Deliveries of material on five of the contracts, on the date mentioned, were less than 100 and more than 90 per cent completed; on four, less than 90 and more than 75 per cent; on seven, less than 75 and more than 50 per cent; on five, less than 50 and more than 25 per cent, and on five, less than 25 per cent. This left 23 contracts on which no material had been delivered. The above does not include material supplied through the Quartermaster's Department on stock requisitions, but includes material being received and installed by the construction divisions, notably, the vitrified tile, etc., furnished by the Shawmut Clay Manufacturing Company.

The delivery of the rising stem and cylindrical valve machinery is 100 per cent completed, with the exception of the main order for 118 cylindrical valves on which deliveries were 98 per cent complete on March 1; and the order for 114 rising stem gate valves, which was also 98 per cent delivered on that date. No deliveries had been made, up to March 1, on the order for 12 auxiliary valve machines.

The class of material on which only few deliveries have been made, consists principally of spare parts, and of insulated cable, starting panels, limit switches, motors and pumps, and miscellaneous material for the operating mechanism of the locks. Four per cent of the order for fender chains had been received up to March 1, but no deliveries had been made on the order for buffer fenders, or for structural steel for the Gatun hydro-electric plant. The total value of the contracts in the above class, including miscellaneous articles and equipment purchased in the United States for use in connection with the erection of machinery, etc., aggregating approximately \$30,000, is \$7,215,185.38.

The status, on March 1, of all contracts for structural material, machinery, valves, etc., for the locks and spillways, under the First Division of the Chief Engineer's office, the erection or installation of which, on the Isthmus, is being performed by contractors, is, as follows:

Contract with the McClintic-Marshall Construction Company for the fabrication and erection of all of the lock gates at \$5,536,000, delivery 99 per cent completed; erection, 73 per cent completed.

Contract with the United States Steel Products Company for six emergency dams at \$2,243,068.38, delivery 55 per cent completed; erection, 30 per cent completed.

Contract with the McClintic-Marshall Construction Company for spillway gates and caissons at \$90,136.94, delivery 100 per cent completed; erection, 94 per cent completed.

Contract with the McClintic-Marshall Construction Company for erection of lock gate recess covers at \$30,000, 95 per cent completed.

The value of these four contracts aggregates \$7,899,205.32.

The total value of the contracts made up to March 1, in connection with the furnishing and erection of structural material, machinery, valves, etc., for the locks and spillways of the Canal, both by contractors, and by the Canal Commission, amounts to \$15,114,390.70.

House Committee on Naval Affairs.

Eight members of the House Committee on Naval Affairs arrived on the Isthmus, on Friday, March 14, on the gunboat *Dolphin* and the converted yacht *Mayflower*. The party consisted of Lemuel P. Padgett of Tennessee, chairman, and Mrs. Padgett; Ernest W. Roberts of Massachusetts, and Mrs. Roberts; Thomas S. Butler of Pennsylvania, and Mrs. Butler; Walter L. Hensley of Missouri, Mrs. Hensley and son; E. P. Bathrick of Ohio, and Mrs. Bathrick; Samuel J. Tribble of Georgia, and Mrs. Tribble; Samuel A. Witherspoon of Mississippi, Mrs. Witherspoon, and daughter; E. S. Theall, clerk; William Padgett, assistant clerk; R. O. Sampson, stenographer, and Frank Byron, messenger.

The members of the party are quartered at Camp Elliott, the men in service tents and the women with the families of the officers. The purpose of their visit is to inspect the Canal construction, the work of sanitation, and the fortifications. The party will sail for the United States on March 20.

Hotel Washington Telephone Service.

Local climatic conditions are particularly severe on the more easily destructible parts of telephone equipment, but experience has suggested several precautionary improvements, which have been incorporated in the private branch exchange at the Hotel Washington, now practically installed. The equipment was manufactured in accordance with the specifications of the telegraph and telephone department of the Panama railroad, and some of the improvements provided for have been adopted by the manufacturers. The private branch exchange in the Hotel McAlpin, New York City, recently installed, is of the same type.

The switchboard in the new Hotel Washington private branch exchange was furnished by the Western Electric Company, is of the lamp signal type, is equipped with 140 subscribers' lines, with an ultimate capacity of 200, has 10 plug-ended trunk circuits, and 10 cord circuits. The equipment in this board is especially treated to withstand climatic conditions. All iron work, as far as possible, is galvanized. All interior woodwork was given two coats of shellac, and all cables, and the wiring of the board was done with tinned copper wire, with enameled insulation, protected by two wrappings of silk and one of cotton, made in variegated colors, twisted in pairs, to designate circuits. All the cables were boiled in an impregnating compound, and given three coats of shellac, two thin and one thick.

The telephone instruments are of the flush type, made from phosphor bronze. The induction coils are boiled in a wax compound, and then covered with two coats of shellac, thus making them impervious to moisture. All iron parts are sheridanized, a special process, resembling to some extent galvanized metal. All woodwork in the

instruments is boiled in compound and shellacked. The wiring is done with tinned copper wire, rubber covered and braided, and made in different colors, in order to identify the circuits. A new departure in this type of telephone is a jack in the lower face of the wall plate, so arranged and connected that a guest requiring a desk set in a room may obtain this service without the necessity of altering the wiring of the set. The bellboy has only to bring the desk set to the guest's room, and insert a plug in the jack, which will connect the desk set with the private branch exchange board.

During the construction of the hotel, galvanized outlet boxes were placed in the walls, and after the plastering had been finished, the telephones were secured in place. This was done by removing four screws in the face plate of the instrument, which allowed it to swing open on hinges fastened to a $\frac{3}{4}$ -inch molding surrounding the plate. The molding was then fastened to the galvanized wall box by machine screws. The wire connection was next made to suitable binding posts, the doors were closed, and screws tightened, thus holding the face plate in its normal position.

The transmitter is of an approved insulated pattern, with a weatherproof granular button treated to exclude moisture. The receiver is also of a new type. The coils are treated with wax compound, shellacked, and the entire exposed magnet of the receiver is given a coat of thin enamel by which it is hoped to overcome one of the chief drawbacks to its use on the Isthmus, namely, that caused by rust forming on the end of the magnet and filling the space between it and the diaphragm.

The interior wiring of the building is divided into three sections, the east, central, and west wings. Conduit is run to three main distributing boxes on the first floor, thence to three distributing boxes on the second floor, and lastly, to three more boxes on the third floor. From each of these distributing boxes, a conduit is run to intermediate distributing boxes, situated in the halls, and from these, a conduit is run to each room. All house distributing cables are of No. 22 B. and S. gage tinned copper wire, with enameled insulation, protected with two wrappings of silk and one of cotton, twisted in pairs, and encased in lead sheath. Cables of suitable size are run to the main distributing boxes, and from there to the intermediate boxes. From the intermediate boxes to the rooms, a No. 18 tinned copper, rubber insulated and dry braided interior wire is used. At the terminals of all cables, lock nut strips are employed in connecting the distributing wires.

The telephone room is situated on the first floor of the hotel, near the rotunda, and contains five modern sound-proof telephone booths equipped with electric lights and fans. There will also be a telegraph operator stationed in this room, who will have direct connection with the cable and radio offices, by which means messages can be received at or dispatched from the hotel. This is expected to be especially valuable to incoming passengers, who will be able to make their arrangements for accommodations; while at sea, directly with the hotel management.

A report on the methods of using explosives on the Canal work is being prepared by Mr. Spencer P. Howell, of the United States Bureau of Mines, who will spend about six months on the Isthmus in investigation.

JOINT LAND COMMISSION.

Rules of Procedure for Filing of Claims and Conduct of Hearings.

The Joint Land Commission has adopted the following rules of procedure for the filing of claims and the conduct of its hearings:

I. All persons, having title or claim to, or interest in lands, or lands under water, situated in any part of the Canal Zone, except in the exempted area, or who have suffered damages of any kind by reason of the grants contained in the Treaty, or by reason of the operations of the United States, its agents or employees, or by reason of the construction, maintenance, operation, sanitation or protection of the said Canal, shall file with the Joint Land Commission, a statement of the entire extent of their property rights and interests. Such statement should include the name, residence, and post-office address of the claimant, the amount of the claim, the location and extent of the property, indicated wherever practicable by maps or drawings, the uses to which such property is put and a description of the improvements which have been made thereon, and should be accompanied by a statement of the title and rights of the claimant thereto, supported by all existing documentary proofs of title.

Statements referring to claims of ownership to land or land under water, together with accompanying documents, should be filed in FOUR copies, but of the legal documents submitted as proofs, one copy only need be attested. All other claims presented to the commission should be filed in at least two copies. All claims shall be submitted on a form supplied by the commission. Such statements of claim and all other forms required by the commission can be obtained on and after March 14, 1913, from the secretary of the commission, at the several police stations in the Canal Zone, or at the office of the secretary of the municipal council of the city of Panama.

II. The statements above described, to be presented by all claimants to private property, should be filed with the secretary of the Joint Land Commission, National Palace, Panama, with as little delay as possible. Claimants to land located in the area between Gatun and Pedro Miguel should file their statements not later than March 31, 1913, and claimants to land located in the remainder of the Canal Zone should file their statements not later than April 15, 1913.

III. Failure on the part of claimants to file the required statement will not preclude the Joint Land Commission from acting upon all cases properly coming before it, without the cooperation of the persons most directly interested.

IV. After an examination of the papers filed with the Joint Land Commission, an opportunity will be given to all claimants to present further evidence in public hearings. The Joint Land Commission reserves the right to call upon claimants for further information and for documents supplementary to those filed with the original statement.

V. The commission will begin hearings upon claims which are ready for adjudication, relating to any lands, in the district between Gamboa and Gatun, excepting townships, on Monday, March 17, 1913, in the Assembly Hall, National Palace, Panama. Due notice of further hearings will be given from time to time.

VI. Proceedings before the Commission may be instituted by the claimant in person, or through his or her attorney in fact or agent. If the claimant is represented by an attorney in fact or agent, a written declaration designating the person to represent the claimant must be filed with the secretary of the Joint Land Commission. Claimants presenting such a declaration in person should sign the same in the presence of the secretary. In case such declarations are not presented in person, the signature of the claimant should be attested in the Republic of Panama, by a municipal official, or in the Canal Zone by the agent in charge of any police station. Forms for the designation of attorneys or agents can be obtained from the secretary of the commission, and within the Canal Zone at the several police stations, and at the office of the secretary of the municipal council of the city of Panama.

VII. All documents required by the Commission, as well as proceedings before the commission, may be in either Spanish or English.

VIII. With reference to the admissibility of evidence, the commission will follow the procedure of a commission of inquiry rather than the technical rules of evidence.

IX. If the claimant be an executor, administrator, guardian, or representative appointed by a judicial tribunal, a duly authenticated copy of the record of the appointment must be filed with the secretary of the commission.

X. The commission reserves the right to require that motions submitted be put in writing.

XI. All expenses incident to the presentation of

witnesses shall be paid by the party at whose motion the witnesses appear.

XII. Upon the filing of claims, notice thereof will be served on the counsel for the United States. The commission will, in each case, fix a time for the filing of an answer, and will then proceed to fix a time for hearing. Notice of such hearing will be served on the claimant, or his representative, and on counsel for the United States.

Such notice shall be signed by the secretary of the commission and shall recite the time when such cause shall be called up for hearing and be served upon the parties affected thereby by sending the same through the mail or otherwise, as the commission shall determine. Such notice so sent shall be deemed sufficient notice to said parties, unless it shall later appear that it has not as a fact been received; and, in that event, further notice may be given, if it appears necessary to the commission.

XIII. At the time fixed for the hearing (or at a later date, if so determined by the commission) any party possessing an interest in the land or improvements thereon may appear and enter a plea in writing, or orally, to be set forth in the record, stating the nature and extent of interest, the amount of damages, and any other matter which the party may desire to have considered in the premises.

If more than one party claiming damages shall appear, they may plead jointly or separately as they may elect.

XIV. The counsel for the United States shall, at the time of the entry of such pleadings provided for in Rule XIII, or later, if the commission so determine, file an answer in writing, or verbally, to be entered upon the record, joining issue in the premises.

XV. In all cases in which the claimant, or his representative, and counsel for the United States are agreed on all questions of title, area, and boundaries, a stated case may be presented to the commission, which will enable the commission immediately to proceed to a hearing of the case and the valuation of the property.

XVI. In all public hearings, as preliminary, the claimant, or his representative, will make a brief but substantial statement of the claim, in which he will embrace the material facts which, in his opinion, are established by the evidence. After the statement on behalf of the claimant, counsel for the Government of the United States, will, in like manner, make a statement of the Government's position. Witnesses will then be called by the claimant for direct and cross examination, to be followed by witnesses for the Government of the United States for direct and cross examination. The claimant, or his representative, may then call witnesses in rebuttal, but the commission reserves the right to fix the time allotted to such rebuttal.

At the conclusion of the testimony, the claimant, or his representative, and counsel for the Government of the United States will proceed to argue the case in detail. Arguments will be limited to one-half hour on a side. When additional time is necessary on either side, application therefor must be made in writing before the hearing begins.

XVII. If a claimant fails to appear after due notice has been given, the commission reserves the right to consider such evidence as may be available. The claimant may, however, appear at any time prior to the final award.

XVIII. If the commissioners, or a majority thereof, shall agree upon a decision in any cause heard before it, it shall make the same a part of the record of the proceedings and send a certified copy of the same to the Government of the United States, and of the Republic of Panama, and any party affected by such decision shall have a right to take a copy of the same.

XIX. In the event of a disagreement of the commission, such disagreement shall be certified to and forwarded to both of said governments.

XX. These rules may be repealed or amended by the commission at any time hereafter as it may determine.

The commission furthermore reserves the right to modify the application of these rules to any particular case if, in the opinion of the commission, the interests of justice are promoted thereby.

By order of the Joint Land Commission.

J. C. LUTTWIELER, Secretary.

Panama, R. P., March 18, 1913.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon and Balboa during the week ending March 15:

Tagus, March 9, from New York, with 2,060 kegs nails, three cases hardware, for stock.

Trivies, March 9, from New York, with 49 reels electric cable, 40 cases electrical material, 21 cases pump machinery, for First Division; 25 cases castings, for emergency dams; 10 cases telephones, for Panama Railroad Company; 16 barrels lime, seven cases copper tacks, for stock.

Parismina, March 11, from New Orleans, with six

cases fire brick, 3,028 pieces yellow pine lumber, for Mechanical Division; 62 pieces dipper tooth points, 500 cases fire brick, 120 barrels fire clay, 150 sacks dairy feed, 12,385 pieces yellow pine lumber, 1,009 pieces cross-ties, 37 pieces piling, for stock.

Seward, March 11, from San Francisco, with 3,347 pieces white pine lumber, 3,000 cases Trojan powder, for stock; 21 bales dredging sleeves, for Sixth Division; two pieces spud timbers, for Atlantic Division.

Prins Sigismund, March 11, from New York, with 10 pieces steel beams, for Panama Railroad Company; 121 pieces steel plates, for stock.

Chr. Knudsen, March 11, from New York, with 131,255 bags cement, for Atlantic and Fifth Divisions.

Panama, March 12, from New York, with 10 cases incandescent lamps, 1,725 pieces pig iron, 401 bags sand, for Mechanical Division; 25 cases drugs and sundries, for Sanitary Department; 11 cases bath tubs, 318 crates tile, for Panama Railroad Company; 13 cases electrical material, 13 reels electric cable, 155 pieces structural steel, 37 crates structural steel, for First Division; 156 pieces structural steel, 18 pieces sewer pipe, for Atlantic Division; 18 bags cork, 17 cases books, 23 bundles galvanized iron sheets, 35 pieces railroad frogs, 10 cases pipe-fittings, 200 cases turpentine, 300 cases linseed oil, 124 pieces steel plates, 20 drums zinc oxide, 100 drums calcium carbide, 667 bundles shovels, 20 cases files, 18 bales sand paper, for stock; and a miscellaneous cargo, the whole consisting of 4,650 packages, weighing 500 tons.

Zacapa, March 12, from New York, with 44 cases castings, 31 cases electrical material, 17 reels electric cable, for First Division; 34 barrel lime, for stock; nine cases chaplets, for Mechanical Division; 30 cases spring beds, for Panama Railroad Company.

Turrialba, March 15, from New Orleans, with 82 pieces lumber, for Mechanical Division; 566 pieces cross-ties, 100 pieces piling, 18,740 pieces lumber, 150 cases fire brick, 417 bales rice straw, for stock.

Asian, March 15, from Liverpool, with 70 packages winch parts, for Sixth Division.

Rainfall from March 1 to 15, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	.43	4	.43
Balboa.....			
*Miraflores.....			
Pedro Miguel.....			
Rio Grande.....	.28	5	.28
<i>Central Section—</i>			
Culebra.....	.56	5	.56
*Camacho.....			
Empire.....	.20	5	.22
Gamboa.....			
*Juan Mina.....			
Alhajuela.....	.01	5	.01
*El Vigia.....	.02	5	.02
*Gorgona.....	.03	6	.03
*Frijoles.....			
*Trinidad.....			
*Monte Lirio.....	.10	6	.10
<i>Atlantic Section—</i>			
Gatun.....	.15	9	.35
*Brazos Brook.....	.12	9	.25
Colon.....	.11	8	.23
†Porto Bello.....	.45	3	.76

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., March 14.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, March 15, 1913. All heights are in feet above mean sealevel:

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela	Gamboa.	Gatun Lake.
Sun., March 9.....	125.8	91.8	48.2	48.2
Mon., March 10.....	125.7	91.7	48.2	48.2
Tues., March 11.....	125.6	91.7	48.2	48.2
Wed., March 12.....	125.6	91.6	48.2	48.2
Thurs., March 13.....	125.6	91.6	48.3	48.2
Fri., March 14.....	125.6	91.6	48.3	48.3
Sat., March 15.....	125.6	91.6	48.3	48.3
Height of low water to nearest foot.....	125.0	91.0	44.0	

Tide Table.

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
March 23.....	4.08	10.20	4.28	10.44	
March 24.....	4.52	11.04	5.10	11.27	
March 25.....	5.35	11.47	5.52		
		P.M.			
March 26.....	12.10	6.18	12.30	6.35	
March 27.....	12.56	7.02	1.15	7.17	
March 28.....	1.43	7.50	2.04	8.05	
March 29.....	2.35	8.43	3.00	9.02	

OFFICIAL CIRCULARS.

Limit Removed in Accumulating Leave.

CULEBRA, C. Z., March 17, 1913.

CIRCULAR No. 132-N. (Cross 297-F.):

The following resolution adopted by the Commission, removing the limit on the amount of leave which may be accumulated by an employee, is published for the information of all concerned:

Whereas it is desired to keep intact such of the Canal organization as will be needed during the remainder of the construction period and to encourage employees to remain on the work so long as their services may be needed by it

Resolved, That, effective April 1, 1913, the limit on the amount of leave which may be accumulated by an employee shall be removed, and thereafter leave may be accumulated up to the time the employee's service is terminated or until he is transferred to the permanent organization for the completion and operation of the Canal. Provided, however, that the rules heretofore governing the forfeiture of leave for unsatisfactory workmanship or conduct shall continue unchanged. An employee who has prior to April 1, 1913, accumulated the maximum leave allowed under the present rules will earn additional leave for service performed on and after that date, to be computed under the rules as at present in force.

The time of taking leave will be governed by paragraphs 10, 11, and 12 of Circular No. 132-L, reading, as follows:

10. Monthly employees may enter on leave within four months after it becomes due, at the convenience of the head of the department or division. Exceptions to this rule may be made only by the Chairman and will be limited to cases of necessity.

11. Hourly employees may enter on leave at any time after it becomes due, subject to the approval of the head of the department or division.

12. Except at termination of an employee's service, leave only becomes due him once a year: *i. e.*, he must complete ten months' service each year before leave becomes due.

GEO. W. GOETHALS, Chairman.

Destruction of Fruit Trees and Crops.

CULEBRA, C. Z., March 12, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

A number of complaints having recently been received regarding the destruction of fruit trees and growing crops by surveying parties, attention is invited to the following circular, No. 193, issued under date of August 6, 1908:

"In cases where it becomes necessary, in order to best promote the construction of the Canal, to enter upon, interfere with, damage or destroy property owned by private individuals or companies, such as buildings, growing crops, fences, or other improvements, written authority must first be secured from the head of the department or division in charge of the work and advance notice given to owners, except in cases of extraordinary emergency requiring immediate action.

In order that a uniform policy may be carried out in adjusting these cases, the head of the department or division will refer all settlements to the Department of Law, giving accurate and detailed information regarding the location of the property and a careful appraisal of the improvements destroyed or expropriated, with dates, names, and places.

The Department of Law will thereupon effect a settlement with the owner within the limits of the appraisal and will communicate the terms agreed upon to the head of the department or division. The latter will then prepare a voucher (Form D. O. 309 Rev.) covering the agreed payment to the owner, this voucher, after being properly signed, to be approved by the Attorney on the Isthmus and the Chairman of the Commission.

"This procedure applies only to improvements such as mentioned and not to land titles."

Please see that this circular is brought to the attention of all employees engaged on survey work.

GEO. W. GOETHALS, Chairman.

Silver Employee's Service Slip.

CULEBRA, C. Z., March 11, 1913.

CIRCULAR No. 229-Z-2:

Hereafter, new Silver Employee's Service Slip (Revised) Form C. E. 262-2, must be used for all clearances by all departments and divisions, and employing offices will accept no clearance unless this form is used. Roll timekeepers will be held responsible for the rate given to employees presenting clearances, and will not enter the names on time rolls at the former rate of pay unless the clearance shows that the reason for leaving former service is one provided in Circular 229-Z. If he quits of his own accord or is discharged he must be rated as provided in Circular 229-Z-1.

If there is any reason to lead the employing office or roll timekeeper to believe the clearance is not entirely

regular the issuing office must be questioned regarding its validity.

All obsolete service slip forms must be immediately destroyed.

GEO. W. GOETHALS, Chairman.

Ratings and Rates of Pay.

CULEBRA, C. Z., March 14, 1913.

CIRCULAR No. 299-R:

In addition to the rates of pay for the position of rigger, shown in Circular No. 299, the rate of 50 cents an hour is hereby established.

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Objection to Reemployment of Striking Waiters.

CULEBRA, C. Z., March 14, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

The following waiters went on strike at the Tivoli Hotel on February 22, 1913, and the Subsistence Department has entered objections to their reemployment:

Thomas Ashmeal
Edwin Brown
Samuel Burke
Llewellyn Galimore
Hubert Grey
Cecil Gunter
Woodbray Harvey
Alfred Jones
Berthal Levy
Thomas McLellan
Stanley Minto
John Sedden
Alfred Shields
Stanford Thomas
William Wright
Charles Bathwell
John Brown
Fred Burrows
Milton Garvey
Edward Goring
Herbert Harris
Allan Hutchinson

Luther Lawrence
Amos McDermott
Millo McQuahe
Alfred Parker
Charles Small
Percy Small
Cecil Tomlinson
Joseph Birkett
Harold Bruce
John Fennell
Milton Gilmore
Theo. Grizzle
Phillip Harrison
Timothy Jessami
Alex Levy
Charles McFarland
Stephen McQuahe
Charles Peterkin
Thomas Smith
Charles Stewart
Conrad Weeks
Augustus White

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Economy in Use of Ice.

CRISTOBAL, C. Z. March 12, 1913.

CIRCULAR No. 207-B.

To Heads of Departments and Divisions and All Concerned: The consumption of ice at the present time is greater than the capacity of the ice plant. It is requested that ice requisitions be revised by heads of departments and divisions and that as great economy as possible be practised by individuals in order that the consumption may be lessened.

EUGENE T. WILSON, Subsistence Officer.

COMMISSARY DEPARTMENT.

Retail prices of cold storage provisions for the week beginning March 21, 1913:

	FRESH MEATS.	Price.
Mutton—	Stewing, per pound.....	6
	Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
	Entire, forequarter (not trimmed, 10 pounds and over), per pound.....	8
	Leg (8 to 10 pounds), per pound.....	17
	Cutlets, per pound.....	18
	Short cut chops, per pound.....	20
Lamb—	Stewing, per pound.....	6
	Entire forequarter, neck trimmed off, per pound.....	9
	Leg (5 to 8 pounds), per pound.....	20
	Chops, per pound.....	24
	Cutlets, per pound.....	24
Veal—	Stewing, per pound.....	10
	Shoulder, for roasting (not under 4 pounds), per pound.....	12½
	Chops, shoulder, per pound.....	16
	Chops, per pound.....	24
	Loin for roasting, per pound.....	24
	Cutlets, per pound.....	28
Pork—	Loin chops or roast, per pound.....	16
Beef—	Suet, per pound.....	2
	Soup, per pound.....	5
	Stew, per pound.....	8
	Plate, per pound.....	9
	Corned, No. 1, per pound.....	14
	Corned, No. 2, per pound.....	12
	Chuck roast (3 pounds and over), per pound.....	12
	Rib roast, second cut (not under 3½ pounds), per pound.....	16
	Rib roast, first cut (not under 3 pounds) per pound.....	18
	Sirloin roast, per pound.....	19
	Rump roast, per pound.....	19
	Porterhouse roast, per pound.....	20
	Steak, chuck, per pound.....	12½
	Round, per pound.....	13
	Rib, per pound.....	18
	Sirloin, per pound.....	19
	Rump, per pound.....	19
	Porterhouse (not less than 1½ pounds), per pound.....	20
	Tenderloin (Western), per pound..	30

Venison (Imported), Stew, per pound.....	Price.
Forequarter, (not under 6½ pounds), per pound.....	5
Rack (not under 5½ pounds) per pound.....	20
Saddle (not under 7½ lbs.), per pound.....	20
Leg (not under 9 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24

MISCELLANEOUS.

Livers—Beef, per pound.....	11
Calf, each.....	60
Half, each.....	30
Steak, Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	13
Frankfurter, per pound.....	13
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	19
Sweetbreads—Beef, per pound.....	140
Eggs, fresh, dozen.....	28
one-half dozen only.....	14
Bluefish, per pound.....	15
Halibut, fresh, per pound.....	15
Oysters, quarts, per keg.....	40

POULTRY AND GAME.

Chickens—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds each.....	1.25
Fancy roasting, corn fed, about 4½ pounds each.....	1.00
Fowls, each.....	1.00
Ducks, (Wester, about 4½ pounds), each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	150
Rabbits, skinned, each.....	30
Ducks, blackhead, pair.....	60
teal, pair.....	50
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants, per pair.....	1.30

CURED AND PICKLED MEATS.

Ham—Sugar cured, per pound.....	20
Sliced, per pound.....	22
Half, for boiling, per pound.....	21
Boiled, per pound.....	28
Hocks, per pound.....	18
Beef, salt, family, per pound.....	12
Bacon—Breakfast, whole piece, per pound.....	25
Sliced, per pound.....	26
Ham, Lunch, per pound.....	32
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00
Pigs' feet, per pound.....	9
Tongues, per pound.....	18

DAIRY PRODUCTS.

Butter—Creamery, special, per pound.....	*10
Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Parmesan, per pound.....	35
Gouda, per pound.....	34
Snappy, cake.....	10
Milk (Certified), per bottle.....	**20
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	125
½-gallon.....	150

VEGETABLES AND FRUITS.

Beets, per pound.....	3
Celery, per head.....	11
Cabbage, per pound.....	3
Cucumbers, per pound.....	18
Carrots, per pound.....	3
Lettuce.....	12
Onions, per pound.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	2
Parsnips, per pound.....	3½
Parsley, bunch.....	3
Squash, per pound.....	14
Turnips, per pound.....	3
Tomatoes.....	*8
Apples, per pound.....	5
Grape fruit, each.....	4
Lemons, dozen.....	24
Limes, per 100.....	80
Oranges, Jamaica, per dozen.....	12

*Indicates reductions from last list.

**Indicates 4 cents allowed for return of bottle.

†Indicates advances on last list.

††Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock supply next lightest weight is supplied and refund note sent for difference.

‡Sold only from Commissaries; no orders take for delivery.

Lost—On evening train, on Saturday, March 15, between Gatun and Culebra, a book by Jane Addams, "The Spirit of youth in city streets." The finder will please communicate with THE CANAL RECORD and necessary postage will be forwarded for its return.

Lost—Sunday, March 16, on first train from Panama to Colon, an Eastman 1-A kodak. Finder will please return to, or communicate with, William Kenealy, Ancon.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The standing of the clubs in the Isthmian duckpin bowling league on March 17 was, as follows:

Team.	Won.	Lost.	P. C.
Gorgona.....	4	2	.666
Culebra.....	4	2	.666
Cristobal.....	4	2	.666
Empire.....	3	3	.500
Gatun.....	2	4	.333
Corozal.....	1	5	.166

An "American League" Y. M. C. A. duckpin bowling tournament was organized at Gatun on Saturday, evening, March 15. Mr. Hill of Empire was chosen president, and Mr. Cotton of Cristobal, secretary. This league will play a regular schedule of games, and it is quite likely that a post series of games will be arranged between the team winning the tournament, and the team winning the tournament in the regular Isthmian Y. M. C. A. duckpin league.

COROZAL.

There was an attendance of 600 at the open air concert given on Sunday night, March 16, by the Tenth Infantry band and the Edith Harris Scott Concert party. A temporary platform, lighted by electricity, was erected directly in front of the clubhouse for the use of the musicians. There were several selections by the band under the direction of Mr. Coe, and appropriate numbers by the concert company. Lieutenant Hoehl of the Tenth Infantry and Secretary Dwell are planning a series of athletic and musical events that will include both the talent from the Corozal clubhouse and the Tenth Infantry. The band will give several more concerts during the stay of the regiment at Corozal.

CULEBRA.

On Saturday night, March 22, "Atop of the world in motion," a series of moving picture films, showing Alaska and Siberia will be shown under the patronage of the National Geographic Society, accompanied by a descriptive lecture of the Arctic region written by Beverly B. Dobbs. Admission will be charged, as follows: members, free; nonmembers—adults 25 cents; children 15 cents.

The following high scores were made during the past week in duckpins: Cae, 104, 108, 106, 101, 109; Steel, 103; Silver, 110, 114; Brown, 109; Palmer, 102.

EMPIRE.

On Friday, March 21, the regular picture show will take place.

The local handicap pool tournament, which started last week, has 21 entries. Thirty-two games have already been played.

Empire will enter a team in the "American" Isthmian duckpin league which will open on Saturday, March 22, when Empire will bowl at Corozal.

At the present time there are five Spanish classes under Professor Gomez, with an enrollment of 65. Any one interested may obtain information at the desk.

The members of the boys' department were taken on an outing to the Las Cascadas plantation on Saturday, March 15.

GORGONA.

The following are the results of the February local tournament in duckpins:

Doubles—1. Davis and Keppler, three games, 612. 2. Denst and Sims, three games, 608. 3. Nowick and Roper, three games, 597.

Singles—1 Davis, three games, 321. 2. Denst, three games, 314.

High score—Davis, one game, 125.

High average—Roper, all games, 95-2.

High scores for the past week: Davis, 100, 105; Arnold, 100; Ruchte, 101; Gebhardt, 105; Sims, 103, 118; Powell, 109; Seebt, 107.

Culebra took two out of three games with Gorgona in the duckpin bowling tournament, with scores, as follows:

Gorgona.	Culebra.
Sims.....	81 94 118
Denst.....	83 88 97
Dunlap.....	78 93 86
King.....	87 89 99
Davis.....	104 88 96
	Brown..... 93 81 90
	Steele..... 81 85 78
	Warner..... 103 118 85
	Anderson..... 87 97 91
	Kiernan..... 89 94 82

Totals.... 433 452 496 453 475 426

A handicap local tournament in duckpins, for singles and doubles, will be held on Good Friday, to be followed by an entertainment in the evening.

The school entertainment was postponed on account of the crowded program during the week.

The gymnasium classes are growing.

Monday evening, the baseball team went to Camp Elliott. The regular gymnasium class will meet on Thursday evening.

The Sunday evening service at the Y. M. C. A., when Mr. Verner gave an illustrated talk on the "Life of

Moses," was well attended. Mrs. Pierson furnished special music.

The Gorgona chorus is rehearsing for an entertainment to be given at Cristobal on Saturday evening, March 22.

GATUN.

Empire defeated Gatun two games out of three in duckpins on Saturday evening, March 15.

The Gatun members meet several times each week to practise for the Isthmian wrestling tournament to be held at Gorgona in the near future.

Several new phonograph records were purchased during the past week.

Despite many transfers, the Gatun clubhouse still holds its membership of 500. The junior department numbers 30, the highest ever reported.

The rearrangement of the library and the cataloguing of the books, according to authors as well as the book names, makes the library one of the most popular features of the clubhouse.

CRISTOBAL.

On Thursday night, there will be special moving picture feature of a set of films known as "Atop of the world in motion."

On Saturday night, March 22, there will be a musical entertainment at the Cristobal clubhouse, given by the Gorgona chorus, with solos, duets, and choruses. All seats will be reserved and on sale, Wednesday, March 19. Admission, 50 cents; members free.

A "smoker," with program of entertainment, is planned for Friday night, March 28.

On Saturday night, March 15, the Cristobal bowling team took two out of three games from the team from Corozal. Scores follow:

Corozal... 442 440 456 Cristobal... 435 450 479

Misdirected Letters.

ANCON, C. Z., March 19, 1913.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Blades, George H.	Henry, Mrs. E. U.
Brooks, T. A.	Hinselmann, A. (photo)
Burke, Andrew	Lewis, David
Carcaud, Miss Erna	Lloyd, Howard
Davis, Duncan	McDonough, Mrs. Joe
Duverney, O.	McGinty, Neal L.
Estwick, Sam'l.	Mahlun, C.
Forbes, Tremague	Oglesby, C. A.
Frederickson, Ramon	Oliver, Lande
Grove, R. A.	Phillips, J. S.
Guild, Charles	Saiger, Harry
Hardy, Miss Mary E. S.	Yount, Dr. Carl C.
Hauton, Dr. A. C.	

Family Quarters.

Applications for family quarters on file February 28, were, as follows:

DISTRICT.	List No. 1.	List No. 2.
Balboa.....	1 (1)	49 (6)
Ancon.....	13 (7)	93 (21)
Ancon Hospital.....	1 (1)	2
Corozal.....		59 (12)
Pedro Miguel.....	1	42 (5)
Culebra.....		42 (7)
Empire.....	3	116 (19)
Las Cascadas.....		55 (7)
Bas Obispo.....		29 (3)
Gorgona.....		49 (27)
Gatun.....		85
Cristobal.....	3 (1)	138 (8)
Toro Point.....	1 (1)	6
Porto Bello.....		8 (5)
Total.....	23 (11)	773 (120)

NOTE—The figures in parentheses show the number of applicants already occupying regular or nonhouse-keeping family quarters at stations other than those at which applications are filed.

Married.

JANUARY-KREUZBERGER—On March 12, Miss Anna Louise Kreuzberger of Schenectady, N. Y., to Mr. Charles Louis January, in the Union Church, Cristobal, the Rev. Carl H. Elliott officiating. Isthmian residence, Colon.

LAMANDT-VOLKAR—At the Union Church, Cristobal, on March 15, Miss Wilhelmina Volk of Hamburg, Germany, to Mr. Max Lamandt of Washington, D. C., the Rev. Carl H. Elliott officiating. Canal Zone residence, Cristobal.

LOST—On January 20, on train from Panama to Balboa, an open face, thin model Waltham watch with monogram "W. A. S." on back, and black ribbon gold fob with the same initials. A reward is offered for its return to J. H. Keefe, Panama railroad station, Panama.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Colon.....	P. R. R.. Tuesday.....	Mar. 18
Advance.....	P. R. R.. Tuesday.....	Mar. 25
Panama.....	P. R. R.. Monday.....	Mar. 31
Allianca.....	P. R. R.. Saturday.....	Apr. 5
Colon.....	P. R. R.. Saturday.....	Apr. 12
Advance.....	P. R. R.. Saturday.....	Apr. 19
Panama.....	P. R. R.. Friday.....	Apr. 25
Allianca.....	P. R. R.. Thursday.....	May 1
Colon.....	P. R. R.. Wednesday.....	May 7
Advance.....	P. R. R.. Tuesday.....	May 13

CRISTOBAL TO NEW YORK.

Panama.....	P. R. R.. Tuesday.....	Mar. 18
Allianca.....	P. R. R.. Monday.....	Mar. 24
Colon.....	P. R. R.. Sunday.....	Mar. 30
Advance.....	P. R. R.. Monday.....	Apr. 7
Panama.....	P. R. R.. Saturday.....	Apr. 12
Allianca.....	P. R. R.. Friday.....	Apr. 18
Colon.....	P. R. R.. Thursday.....	Apr. 24
Advance.....	P. R. R.. Thursday.....	May 1
Panama.....	P. R. R.. Wednesday.....	May 7
Allianca.....	P. R. R.. Tuesday.....	May 13

NEW YORK TO COLON.

Almirante.....	U. F. C.. Wednesday.....	Mar. 12
Prinz Eitel Friedrich.....	H. A..... Saturday.....	Mar. 15
Oruba.....	R. M..... Saturday.....	Mar. 15
Carrillo.....	U. F. C.. Saturday.....	Mar. 15
Santa Marta.....	U. F. C.. Wednesday.....	Mar. 19
Prinz August Wilhelm.....	H. A..... Saturday.....	Mar. 22
Pastores.....	U. F. C.. Saturday.....	Mar. 22
Metapan.....	U. F. C.. Wednesday.....	Mar. 26
Clyde.....	R. M..... Saturday.....	Mar. 29
Tivives.....	U. F. C.. Saturday.....	Mar. 29
Prinz Sigismund.....	H. A..... Saturday.....	Mar. 29
Zacapa.....	U. F. C.. Wednesday.....	April 2

COLON TO NEW YORK.

Zacapa.....	U. F. C.. Thursday.....	Mar. 20
Prinz Joachim.....	H. A..... Tuesday.....	Mar. 25
Sixola.....	U. F. C.. Tuesday.....	Mar. 25
Almirante.....	U. F. C.. Thursday.....	Mar. 27
Prinz Eitel Friedrich.....	H. A..... Monday.....	Mar. 31
Carrillo.....	U. F. C.. Tuesday.....	April 1
Thames.....	R. M..... Tuesday.....	April 1
Santa Marta.....	U. F. C.. Thursday.....	April 3

NEW ORLEANS TO COLON.

Heredia.....	U. F. C.. Wednesday.....	Mar. 19
Atenas.....	U. F. C.. Saturday.....	Mar. 22
Parismina.....	U. F. C.. Wednesday.....	Mar. 26
Turrialba.....	U. F. C.. Saturday.....	Mar. 29
Cartago.....	U. F. C.. Wednesday.....	April 2
Abangarez.....	U. F. C.. Saturday.....	April 5

COLON TO NEW ORLEANS.

Turrialba.....	U. F. C.. Thursday.....	Mar. 20
Cartago.....	U. F. C.. Saturday.....	Mar. 22
Abangarez.....	U. F. C.. Thursday.....	Mar. 27
Heredia.....	U. F. C.. Saturday.....	Mar. 29
Atenas.....	U. F. C.. Thursday.....	April 3
Parismina.....	U. F. C.. Saturday.....	April 5

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

Hamburg-American steamers for New York, via Kingston and Santiago de Cuba, sail thus: the *Prins Joachim* and the *Prins August Wilhelm* on alternate Tuesdays at 10 a. m., and the *Prins Sigismund* and the *Prins Eitel Friedrich* on alternate Mondays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays, at 3 p. m., ships for New York via Kingston, on Tuesdays, at 2 p. m. and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct, Tuesdays at 3 p. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending March 15:

Arrivals—March 10, *Ucayali*, from Mollendo; March 11, *Seward*, from San Francisco; March 12, *Huasco*, from Valparaiso; March 13, *Ecuador*, from Guayaquil.

Departures—March 10, *Peru*, to Guayaquil; March 10, *Guatemala*, to Callao; March 11, *Quito*, to Guayaquil; March 13, *Arica*, to Tumaco; March 15, *Barracouta*, to Central America; March 15, *Morelos*, (Mexican gunboat), to Mexico.



The Canal Record

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Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission for the month of February is published in full on Pages 253, 254, 255, 256, and 257 of this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Coal Space for German Company.

A formal application for coal space has been made by Mr. O. Godeffrey, representing the Deutsches Kohlen Depot Gesellschaft mit beschränkter Haftung of Hamburg, Germany, which, in turn, represents the associated German steamship lines to the number of about fifteen. Mr. Godeffrey was on the Isthmus a few days ago and looked into the matter personally. His application calls for sufficient space to store about 15,000 tons of coal, with a possible increase later as conditions might warrant.

Extension of Crude Oil Contract.

The present contract with the Union Oil Company of California for supplying the crude oil used by the Canal Commission and Panama railroad expires on March 31 of this year, and on March 4, the Secretary of War approved the extension of the existing agreement until June 30, 1914, in effect, without change. The Union Oil Company has been supplying its product to the Commission since August, 1907, although it was not until November 14, 1907 that its pipe line across the Isthmus was in complete operation. The revocable license granted it on January 10, 1906 was superseded on April 1, 1909, by a contract for one year, extendible for three years, or until April 1, 1913. Under the former license the company delivered oil on the Isthmus at the rate of 90 cents a barrel; under the succeeding agreement, the price was advanced 20 cents a barrel, which price still obtains. The maximum amount of oil that can be purchased in any one month at the present time is 100,000 barrels. The annual

consumption has steadily increased as noted in the following table showing the sales to the Commission by years and parts of years to March 1, 1913, together with the average by months:

YEAR.	Annual Barrels.	Monthly Average Barrels.
1907*.....	6,919	1,384
1908.....	154,817	12,901
1909.....	534,958	44,580
1910.....	652,022	54,355
1911.....	854,719.19	71,226.60
1912.....	913,722.96	76,143.58
1913—		
January.....		78,537.17
February.....		66,048.32

*Five months.

Settlement of Estates of Americans, not Employees.

The Chairman of the Canal Commission has approved an arrangement in which the Collector of Revenues will administrate the estates, consisting entirely of personal property, of Americans, not employed by the Canal Commission or Panama railroad, who die in the Canal Zone. The Collector of Revenues will act in these cases under appointment in each instance by the Courts, and no fee will be exacted by him for services performed. The three Circuit Court justices have also agreed to remit the Court costs in each case. All other charges will, however, be charged against the estate to be administrated.

Rest Room for Women at Balboa.

A small rest house for women shoppers at the Balboa commissary is being constructed on the lot facing the commissary building. The room will also be used by the saleswomen of the commissary who remain in Balboa during the noon hours. The building will be of one story, 18 by 12 feet in size, and will contain one public room and a toilet room. It will be furnished with chairs and a table.

Removal of Buildings.

The building at Bas Obispo, formerly used as a quartermaster's storehouse, will be dismantled and moved to Corozal, where it will be reerected and used as an office and storehouse by the district quartermaster at that point. The present office and storehouse at Corozal is in two silver laborers' barracks, which, when vacated, will again be converted into laborers' quarters.

Work has been begun at Gorgona on the demolition of two Type 5 quarters, which will be reerected at Corozal. There were 56 American built quarters at Gorgona, 40 of which were for use of married employees, and 16 for bachelor employees.

Use of Lubricants on Floating Equipment.

A committee, consisting of Messrs. James Macfarlane, W. J. White, and J. E. Johnson, appointed by the Chairman to investigate the reports of lubricant consumption, on Com-

mission tugboats, has recommended the following:

That revolution counters be placed on all self-propelling craft that will be held in service on the completed Canal. That on nonpropelling craft this data should be computed on service hours only. That on tugboats this data should be computed on service hours and engine miles. That all lubricants and waste used on floating equipment, when under repairs, should be charged to "Repairs" and not to "Operation," as has been the practice in the past.

The recommendations of the committee have been approved.

Disposal of Sewage.

The disposal of sewage from the villages in the Canal Zone, and from Panama and Colon, was a problem of primary importance in making healthful the environment of the Canal workers. Withal that a country of perennial warmth, abounding in insect carriers, and in which contagious diseases were notoriously endemic, seemed a location in which the disposal of sewage would be a matter of great care and expense, the arrangements which have been in successful operation are relatively simple. The seaport towns have sewer mains leading out into the respective bays, emptying well beyond the line of low tide. The inland towns discharge their sewage into streams, with which the broken topography is well supplied, and the streams lose it in the sea, or in Gatun Lake. This, in connection with the typical sewer system of trunk pipes through the streets, is the method for all Canal Zone villages occupied by Americans. Such provision is made at Balboa, Ancon, Corozal, Miraflores, Pedro Miguel, Paraiso, Culebra, Empire, Las Cascadas, and Bas Obispo; at Camps Otis and Elliott, respectively, and in the American section of Matachin, Gorgona, Gatun, and Cristobal.

Certain native villages and outlying sections of American villages have no sewer systems. Among the larger villages of this kind are Cartagenita, New Paraiso, Golden Green, Mandingo, Gamboa, Frioles, and Stillsonville. In such places are pit closets, disinfected every week, while the waste water from household operations is thrown into surface drains.

At Culebra, nine houses, out of reach of the sewer system, are connected with a septic tank, a waterproof, airtight cement container in which the sewage putrefies and liquefies. In the process the bacteria of putrefaction destroy the bacteria of disease, so that as the liquid flows from the tank it is clear and harmless.

The passage of sewage from villages on the north side of the continental divide, south of Gatun, into Gatun Lake, will have no effect on the use of the lake water as an auxiliary supply for Colon and Cristobal. Practically all of the villages in this area will be removed at

the completion of the Canal. The only diseases met with on the Canal Zone which can be transmitted through the water supply are dysentery and typhoid fever, and they are infrequent. The filters will be relied upon to remove these and other pathogenic bacteria.

The sewer system of the city of Panama was described in THE CANAL RECORD of January 15, 1913. In its general plan, the system for Colon is the same. The low elevation of the latter city, which is founded on a fill on coral reef, makes it necessary to pump part of the sewage out to sea. It flows into a sump located at the corner of Eighth and D streets, and is pumped out through an 8-inch discharge pipe into the sea on the east side of the city. The plant is equipped with two 12-inch centrifugal pumps, driven by direct-connected motors. On D street is a closed concrete storm sewer which has to be cleaned twice a year, by means of a motor-driven centrifugal pump, mounted on a truck, which is moved from point to point as needed. The storm sewer is 17,373 feet, or 3.3 miles in length, and the city has 32,464 feet, or 6.1 miles of sanitary sewer.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the three weeks ending March 22:

DATE.	Hours worked.	Cubic yards.
March 3.....	8.55	2,025
March 4.....	7.20	2,929
March 5.....	9.10	2,420
March 6.....	9.25	2,250
March 7.....	10.40	3,372
March 8.....	11.10	2,984
Total.....	56.40	15,980
March 10.....	9.10	3,992
March 11.....	8.05	2,718
March 12.....	9.20	2,561
March 13.....	10.05	3,225
March 14.....	10.30	2,968
March 15.....	8.35	2,404
Total.....	55.45	17,868
March 17.....	9.25	2,595
March 18.....	9.55	2,736
March 19.....	8.50	2,896
March 20.....	9.00	3,027
March 21 (Holiday).....		
March 22.....	10.00	3,278
Total.....	47.10	14,532

Salvation Army Notes.

The Salvation Army has obtained a lot in New Gatun adjoining the Commission public school for colored children for the purpose of erecting a mission hall or barracks. The building will contain quarters for officers, and is to cost about \$3,000.

During the month of May, the annual season of self-denial will be observed, terminating with the last week in the month. In 1912, the self-denial offering amounted to \$835. The mission will endeavor to raise the sum of \$1,000 this year.

In company with the territorial commander, Colonel Rothewell of Jamaica, Adjutant Catlin, the head of the work in Panama, has just returned from a ten days' mission to the Salvation Army quarters at Bocas del Toro. The territory under Colonel Rothewell includes Jamaica, Costa Rica, Trinidad, Barbados, British Guiana, and Panama. There are 71 officers stationed in those countries.

Change in Sailing Date of the "Ancon."

The sailing date of the steamship *Ancon* has been changed from 3 p. m., Wednesday, March 26, to 3 p. m., Friday, March 28.

EXECUTIVE ORDER.

Compensation for Personal Injuries—New Regulation in Effect March 1, 1913.

The President has signed an Executive Order prescribing the terms under which compensation for personal injuries to employees of the United States and employees of the Panama railroad may be granted after March 1, 1913, as follows:

By virtue of the authority, vested in me by Section 5 of the Panama Canal Act, approved August 24, 1912, directing the President to "provide a method for the determination and adjustment of all claims arising out of personal injuries to employees thereafter occurring while directly engaged in actual work in connection with the construction, maintenance, operation or sanitation of the Canal, or of the Panama railroad, or of any auxiliary canals, locks or other works necessary and convenient for the construction, maintenance, operation or sanitation of the Canal, whether such injuries result in death or not, and prescribe a schedule of compensation therefor," I hereby establish the following Order for the Canal Zone:

Section 1. The United States or the Panama Railroad Company shall pay compensation as hereinafter specified for personal injuries to their respective employees occurring after March 1, 1913, while such employees are directly engaged in actual work in connection with the construction, maintenance, operation or sanitation of the Canal, or of the Panama railroad, or of any auxiliary canals, locks or other works necessary and convenient for the construction, maintenance, operation or sanitation of the Canal, whether such injuries result in death or not; but no compensation shall be paid, if the injury is caused (1) by the employee's intention to bring about the injury or death of himself or of another, or (2) by his intoxication.

Section 2. *Compensation the exclusive remedy.*—Except as provided in this Order, the United States and the Panama Railroad Company shall not be liable for personal injury to or the death of an employee for which compensation is provided in Section 1 hereof.

Section 3. *Waiting period.*—During the first five days of disability resulting from the injury the employee shall not be entitled to compensation, except as provided in Section 9. No compensation shall at any time be paid for such period.

Section 4. *Total disability.*—If the injury results in total disability, there shall be paid to the employee a monthly compensation equal to 50 per cent of his monthly pay. This compensation shall be paid during such disability, not exceeding a period of six years from the fifth day of disability of any kind resulting from the injury. After such period of six years there shall be paid to the employee during such disability a monthly compensation equal to not more than 40 per cent and not less than 25 per cent of his monthly pay.

Section 5. *Partial disability.*—If the injury results in partial disability, there shall be paid to the employee a monthly compensation equal to 50 per cent of the difference between his monthly pay and his wage earning capacity per month after the beginning of such partial disability. This compensation shall be paid during such disability for a period not exceeding six years from the fifth day of disability of any kind resulting from the injury. After such period of six years, there shall be paid to the employee during such disability a monthly compensation equal to not more than 40 per cent and not less than 25 per cent of the difference between his monthly pay and his wage earning capacity per month after such period of six years.

Section 6. *Affidavit as to wages.*—After the beginning of partial disability the Gover-

nor of the Panama Canal may, from time to time, require the injured employee to make an affidavit as to the wages per month which he is receiving. In the statement of the wages the value of rent, board, lodging and other advantages received from the employer, which can be estimated in money, shall be taken into account. If the employee at any time fails to make such affidavit, he shall not be entitled to any compensation while such failure continues, and the period of such failure shall be deducted from the period during which compensation is payable to the employee.

Section 7. *Refusal to work.*—If the employee refuses to work after suitable work is furnished to or secured for him by the United States or the Panama Railroad Company he shall not be entitled to any compensation while such refusal continues, and the period of such refusal shall be deducted from the period during which compensation is payable to the employee.

Section 8. *Sick leave.*—If at the time disability begins the employee has to his credit any unused sick leave, he may, at his option, subject to the approval of the Governor of the Panama Canal, use such leave until exhausted. During such time no compensation shall accrue, and any period of sick leave allowed on account of such disability after the first five days of disability shall be deducted from the period of six years referred to in Sections 4 and 5.

Section 9. *Medical, etc., attendance.*—There shall be furnished to the injured employee reasonable medical, surgical and hospital services and supplies, unless the employee elects to furnish his own physician or to care for himself. If in the opinion of the Governor of the Panama Canal a surgical operation is necessary, either to save the life of the injured employee or to render the disability less serious, and the employee refuses to submit to such operation, he shall not be entitled to any compensation thereafter, but in case of his death, compensation shall be paid as hereinafter provided.

Section 10. *Transportation of injured employees.*—If in the opinion of the Governor of the Panama Canal it is not desirable to continue the injured employee in the service, such employee, as soon as he is able to travel, shall, in the discretion of the Governor of the Panama Canal, be furnished transportation to his home. If at the time of the injury the employee is on the Isthmus, the Governor of the Panama Canal may, in his discretion, suspend, for such period as such employee remains on the Isthmus after free transportation has been offered to him as herein provided, the compensation payable to such employee.

Section 11. *Death payments.*—If the injury results in death within six years, there shall be paid to the following persons for the following periods a monthly compensation equal to the following percentages of the deceased employee's monthly pay:

A. *To the widow or widower if there is no child:* If wholly dependent for support upon the deceased employee at the time of the death, 35 per cent for a period of six years from the date of the death, unless before that time such widow or widower dies or marries; after such period of six years not less than 20 per cent nor more than 30 per cent until death or marriage; if partly dependent, the compensation shall be a proportionate amount of the above compensation.

B. *To the widow or widower if there is a child:* The compensation payable under Clause A, and in addition thereto 10 per cent for each child, not to exceed a total of 50 per cent for self and children; after the expiration of six years from the date of the death the total for self and children shall not exceed 25 per cent to

40 per cent. Compensation payable on account of any child shall cease when he dies, marries, or reaches the age of eighteen, or if over the age of eighteen and incapable of self-support, becomes capable of self-support.

C. *To the children if there is no widow or widower.*—Twenty-five per cent for one child and 10 per cent additional for each additional child not to exceed a total of 50 per cent divided among such children share and share alike. After the expiration of six years from the date of the death of the deceased employee, the total shall not exceed 25 to 40 per cent. The compensation of each child shall be paid until he dies, marries or reaches the age of eighteen years, or if over the age of eighteen and incapable of self-support, becomes capable of self-support.

D. *To the parents, if there is no widow, widower or child:* If one is wholly dependent for support upon the deceased employee at the time of his death and the other is not dependent to any extent, 25 per cent; if both are wholly dependent, 20 per cent to each; if one is or both are partly dependent a proportionate amount in the discretion of the Governor of the Panama Canal. This compensation shall be paid for a period of eight years from the time of the death, unless before that time the parent dies, marries or ceases to be dependent.

E. *To the brothers, sisters, grandchildren, and grandparents, if there is no widow, widower, child or dependent parent:* If one is wholly dependent upon the deceased employee for support at the time of the death, 20 per cent; if more than one are wholly dependent, 30 per cent, divided among them share and share alike. If there is no one of them wholly dependent, but one or more are partly dependent, 10 per cent, divided among them share and share alike. The compensation of each beneficiary shall be paid for a period of eight years from the time of the death unless before that time he, if a grandparent dies, marries or ceases to be dependent, or, if a brother, sister or grandchild, dies, marries or reaches the age of eighteen years, or if over that age and incapable of self-support becomes capable of self-support.

F. As used in this section, the terms "child" and "children" include stepchildren, adopted children, posthumous children and illegitimate children, but do not include married children. The terms "brother" and "sister" and their plurals include stepbrothers, and stepsisters, half-brothers and half-sisters, and brothers and sisters adopted by the parent of the deceased employee, but do not include married brothers and married sisters. The terms "grandchild" and "grandchildren" include children of adopted children, and children of stepchildren, but do not include stepchildren of children, stepchildren of stepchildren, stepchildren of adopted children or married grandchildren. All of the above terms include only persons under eighteen years of age or over that age and incapable of self-support. The terms "parent" and "parents" include stepparents and the parents by whom the deceased was adopted. The terms "grandparent" and "grandparents" include the parents of the parents by whom the deceased employee was adopted, but do not include parents of stepparents, stepparents of parents, or stepparents of stepparents. The terms "widow" and "widower" include only the decedent's wife or husband actually

dependent upon him or her for support at the time of the death.

G. The period during which compensation was payable to the deceased employee before his death shall be deducted from the period of six years referred to in Clauses A, B, and C, and from the period of eight years referred to in Clauses D and E.

H. Upon the cessation of compensation under this section to or on account of any person, the compensation of the remaining persons entitled to compensation for the unexpired part of the period during which their compensation is payable, shall be that which such persons would have received if they had been the only persons entitled to compensation at the time of the decedent's death.

Section 12. *Burial expenses.*—If the employee dies as a result of the injury away from his home office or outside of the United States and compensation has not ceased, his body shall, if practicable, or if desired by his relatives, and if transportation has not been furnished the employee under Section 10 before his death, be embalmed and transported in a hermetically sealed casket to the home of the employee if such home is within the United States. If death occurs on the Isthmus and the body is not transported away from the Isthmus, the body shall be interred on the Isthmus at the expense of the United States or of the Panama railroad.

Section 13. *Computation of pay.*—If the monthly pay of the employee is over two hundred dollars a month, the monthly pay shall be considered to be two hundred dollars. Subject to this maximum, the monthly pay shall be computed, as follows:

(a) If the employee is paid by the year divide his yearly pay at the time of the injury by twelve;

(b) If the employee is paid by the month, take his monthly pay at the time of the injury;

(c) If the employee is paid by the week, multiply his weekly pay at the time of the injury by fifty-two and divide the result by twelve;

(d) If the employee is paid by the day, multiply his daily pay at the time of the injury by twenty-six;

(e) If the employee is paid by the hour, multiply his hourly pay at the time of the injury by the number of hours constituting a day's work and multiply the result by twenty-six;

(f) If the employee is paid by his output, find his hourly pay at the time of the injury by dividing the total amount earned by him in the employment in which and at the rate of pay at which he was employed at the time of the injury, during so much of the 30 days next preceding the injury including the day of the injury, as he was so employed, by the number of hours so employed during such 30 days, then proceed as in (e);

(g) In making the computation provided in Clauses (e) and (f) of this section, overtime shall not be taken into account;

(h) Subsistence shall be included as part of the pay.

Section 14. *Commutation of periodical payments.*—If the monthly payments to the beneficiary are less than \$5 per month, or if the beneficiary is not a citizen of the United States, or is, or is about to become a nonresident of the United States, or if the Governor of the Panama Canal determines that it is for the best interests of the beneficiary, the liability of the United States or of the Panama Railroad Company for compensation to such beneficiary shall be discharged by the payment of a lump sum equal to two-thirds of all future payments of compensation. The probability of the beneficiary's death before

the expiration of the period during which he is entitled to compensation, shall be determined according to the American Table of Mortality. The probability of the happening of any other contingency affecting the amount or duration of the compensation shall be disregarded.

Until such time as the President, under the authority of Section 4 of the Act of August 24, 1912, entitled "An Act to provide for the opening, maintenance, protection and operation of the Panama Canal and the sanitation and government of the Canal Zone," shall discontinue the Isthmian Canal Commission, compensation shall be paid in a lump sum in all cases, unless the Chairman of the Isthmian Canal Commission in any case determines that payment in installments for any part or all of the period during which compensation is payable is for the best interests of the United States or of the Panama Railroad Company or of the beneficiary.

Section 15. Payment of the compensation shall be made to the beneficiary or to such representative as the Governor of the Panama Canal may determine.

Section 16. *Determination of wage earning capacity.*—In the determination of the employee's wage earning capacity after the beginning of partial disability the value of rent, board, lodging and other advantages which are received from his employer and which can be estimated in money, shall be taken into account.

Section 17. *Notice of injury or death.*—Immediately after the injury, the injured employee or some one on his behalf shall give to the immediate superior of such employee a written notice of the injury, and if the injury results in the death of the employee, one of the persons entitled to compensation or some person on his behalf, within 90 days thereafter, shall give to the immediate superior of such employee or to the Governor of the Panama Canal a written notice of such death. The notice shall state the name of the employee, his class of service, the year, month, day, and hour when and the particular locality where the injury or death occurred, the cause of the injury or death, the nature of the injury, the nature and extent of the disability resulting therefrom and the address of the employee and of the person giving the notice. The notice may be given personally or sent by mail. The Governor of the Panama Canal may, in his discretion, waive the giving of a notice.

Section 18. *Report of injury or death.*—Immediately after an injury to an employee resulting in his death or in his probable disability, the immediate superior of the employee shall at once make a report to the Governor of the Panama Canal, containing such information as the Governor of the Panama Canal may, by regulation, require.

Section 19. *Claim for compensation.*—No compensation under this Order shall be allowed to any person unless he, or some one on his behalf, shall make a written claim therefor upon the Governor of the Panama Canal within the time specified in Section 21. The claim may be served personally upon, or sent by mail to the Governor of the Panama Canal or to such person as he may, by regulation, require.

Section 20. *Contents of claim.*—The claim shall be signed by the person making the claim, and shall state the name of the employee, his age, sex, nationality and class of service, the year, month, day, and hour when and the particular locality where the injury or death occurred, the cause of the injury or death, the nature of the injury, the nature and extent of the disability resulting therefrom; the monthly pay of the employee at the time of the injury, the relationship of the person entitled to compensation to the employee, the names and addresses of all persons entitled

to compensation on account of such injury or death, the amount and duration of the compensation claimed, and the address of the person making the claim. The claim shall be sworn to by the person entitled to compensation or by the person acting on his behalf, and, except in case of death, or as otherwise provided in regulations prescribed by the Governor of the Panama Canal, shall be accompanied by a certificate of the employee's physician, if any, stating the nature of the injury, and the nature and extent of the disability. The claim shall, wherever possible, be made on forms furnished by the Governor of the Panama Canal, and in addition to the statements above required, shall contain such other information as the Governor of the Panama Canal may require.

The Governor of the Panama Canal may waive the making of and swearing to claims and the inclusion therein of any of the above requirements in such cases as he may deem proper.

Section 21. Time within which claim must be made.—Claims for compensation shall be made within 60 days after the injury, or, in case of death, within one year after the death. For any reasonable cause shown, the Governor of the Panama Canal may allow claim for injury to be filed within one year after the injury.

Section 22. Amendment of Claim.—The Governor of the Panama Canal may, after receipt of the claim, demand a further claim specifying in the demand in what particular the claim is defective. Failure to make such demand shall constitute a waiver by the United States or by the Panama Railroad Company, as the case may be, of all defects which the claim may contain. After receipt of such demand, the person making the claim may, at any time within 60 days, make an amended claim which shall supersede the first claim and have the same effect as an original claim.

Section 23. Medical examination.—After the injury and during disability the employee shall as frequently and at such times and places as may be reasonably required submit himself to examination by a medical officer of the United States or by a duly qualified physician designated by the Governor of the Panama Canal and paid by the United States or by the Panama Railroad Company, as the case may be. The employee may have a duly qualified physician designated and paid by him present to participate in such examination. For all examinations after the first, the employee shall, in the discretion of the Governor of the Panama Canal, be paid his reasonable traveling and other expenses and loss of wages incurred in order to submit to such examination. If the employee refuses to submit himself for or in any way obstructs any examination, his right to claim compensation under this Order shall be suspended until such refusal or obstruction ceases. No compensation shall be payable while such refusal or obstruction continues and such period shall be deducted from the period for which compensation would otherwise be payable.

Section 24. Disagreement between physicians.—In case of any disagreement between the physician making an examination on the part of the United States or the Panama Railroad Company and the employee's physician, the Governor of the Panama Canal shall appoint a third physician, duly qualified. The decision of the majority shall be final. A reasonable fee shall be allowed and paid by the United States or by the Panama Railroad Company, as the case may be, to such third physician if he is not a medical officer of the United States.

Section 25. Assignment of right against third person.—If an injury or death for which compensation is payable under this Order is

caused under circumstances creating a legal liability in some person other than the United States or the Panama Railroad Company to pay damages therefor, no compensation shall be payable to any beneficiary for such injury or death until he assigns to the United States or to the Panama Railroad Company, as the case may be, any right of action which he may have to enforce such liability of such other person, or any right which he may have to share in any money (or other property) received in satisfaction of such liability of such other person. The United States or the Panama Railroad Company, as the case may be, if it prosecutes such right to judgment or settlement shall after deducting the amount of any compensation already paid to the beneficiary and the costs of such prosecution, pay over to the beneficiary any surplus remaining. Such surplus so paid over shall be credited on future installments of compensation as they become due. The Governor of the Panama Canal may waive the requirement of such assignment or may waive it for such period as he may deem proper.

Section 26. Assignment of right against Panama Railroad Company.—If an injury or death for which compensation is payable under this Order is caused under circumstances creating a legal liability in the Panama Railroad Company to pay damages therefor under the laws of any State, Territory or possession of the United States or of the District of Columbia or of any foreign country, no compensation shall be payable to any beneficiary for such injury or death until he releases to the Panama Railroad Company, any right of action which he may have to enforce such liability of the Panama railroad or until he assigns to the United States or to the Panama Railroad Company, as the case may be, any right which he may have to share in any money (or other property) received in satisfaction of such liability of the Panama Railroad Company. The Governor of the Panama Canal may waive the requirement of such assignment or release for such period as he may deem proper.

Section 27. Assignments and attachments.—No claims for compensation under this Order shall be assignable, and all compensation and claims therefor shall be exempt from all claims of creditors. This section is hereby constituted a part of the Laws of the Canal Zone.

Section 28. Attorneys' fees.—No claim for legal services in connection with any claim arising under this Order shall be enforceable unless approved by the Governor of the Panama Canal. This section is hereby constituted a part of the Laws of the Canal Zone.

Section 29. Modification of allowance of compensation.—The Governor of the Panama Canal may at any time review, and in accordance with the facts found in such review, end, diminish, or increase any compensation previously fixed or determined.

Section 30. Recovery of compensation erroneously paid.—If any compensation is paid under mistake of law or of fact the Governor of the Panama Canal shall immediately cancel any order under which such compensation has been paid, and shall recover, as far as practicable, any amount which has been so paid.

Section 31. Powers of Governor of the Panama Canal.—The Governor of the Panama Canal shall make all necessary rules and regulations for the proper, effective, and economical enforcement of this Order, and shall decide all questions arising under this Order or in regard to the interpretation thereof. His determination of any fact necessary to or underlying any claim hereunder shall be final and conclusive upon all parties and claimants or beneficiaries.

Section 32. Powers of Chairman of Isthmian Canal Commission.—Until such time as the President, under the authority of Section

4 of the Act of August 24, 1912, entitled "An Act to provide for the opening, maintenance, protection and operation of the Panama Canal, and the sanitation and government of the Canal Zone" shall discontinue the Isthmian Canal Commission, and until the Governor of the Panama Canal is appointed and has qualified, all the rights, powers and duties vested in the Governor of the Panama Canal by this Order shall be exercised by the Chairman of the Isthmian Canal Commission.

Section 33. Penalty for false swearing.—Whoever shall make in any affidavit required under Section 6 or in any claim required by Section 19, any statement, knowing it to be false, shall be deemed guilty of perjury and shall be punished by a fine of not more than \$5,000 or by imprisonment for not more than two years, or by both such fine and imprisonment. This section is hereby constituted a part of the Laws of the Canal Zone.

Section 34. Singular and masculine.—Wherever used in this Order the singular includes the plural and the masculine gender includes the feminine and neuter.

Section 35. Liability of United States and of Panama Railroad Company.—If the payment of compensation under this Order on account of an injury or death is to be made from the funds of the United States, the Panama Railroad Company shall be released and discharged from all liability on account of such injury or death, and if it is to be made from the funds of the Panama Railroad Company, the United States shall be released and discharged from all liability on account of such injury or death. This section is hereby constituted a part of the Laws of the Canal Zone.

Section 36. Repeal of Laws of Canal Zone.—All laws of the Canal Zone inconsistent with any of the provisions of this Order are hereby repealed. This section is hereby constituted a part of the Laws of the Canal Zone.

Section 37. Time of taking effect.—This Order shall take effect March 1, 1913.

WM. H. TAFT.

THE WHITE HOUSE,
February 26, 1913.

[No. 1722½]

Levelman and Transitman Examination.

Examination for promotion to the positions of levelman and transitman is scheduled to be held in the Commission clubhouse at Empire, on Sunday, April 20.

The examination will commence promptly at 9 a. m., and will be divided into three parts, which will be given in the order indicated, viz: Written and oral examination, and a statement of education and experience. Competitors will be required to complete the written portion of the examination before 1 p. m.

Applications for examination should be addressed to the undersigned, through the head of the department or division, before the close of business on Thursday, April 17.

Applicants should bring to the examination room pens, pencils, triangles, and tables of circular functions, but no paper, ink, or blotters.

Applicants who fail to appear for examination before 9 a. m., or who do not apply for examination through the proper channels before the close of business on Thursday, April 17, will not be admitted to the examination.

No card of admission will be needed.

A. B. NICHOLS,

Chairman, Examining Board.

Culebra, C. Z., March 22, 1913.

Lost—On March 12, at Naos Island, Canal Zone service medal No. 1404, issued to Mr. Samuel W. Jennings. Finder please communicate with Ancon police station.

CANAL WORK IN FEBRUARY.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., March 15, 1913.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of February, 1913:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the construction divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	2d. Div.	5th Div.	6th Div.	Total.
Work excavation, dry	Cubic yards	11,24	996,800	32,43	344,758		1,38,542
Work excavation, wet	Cubic yards	305,949		*175,225		239,022	718,216
Total work excavation	Cubic yards..	315,100	996,800	207,968	344,758	239,032	2,103,748
Plant excavation, dry	Cubic yards.			4,752			4,752
Plant excavation, wet	Cubic yards.						
Total plant excavation	Cubic yards..						
Total Canal excavation	Cubic yards..	315,190	996,800	222,720	344,758	239,032	2,108,530
Material placed in dams.	Cubic yards..	88,792			35,000		123,792
Concrete placed, locks dams and spillways	Cubic yards..	33,808			43,681		77,489
Explosives used.....	Tons (Gross)	48.14	120.33	7.97	60.89	10.60	247.33
Rock drilled.....	Feet.....	22,559	310,215	11,939	96,763	4,573	436,046
Tracks removed.....	Miles.....		7.84				7.84
New tracks laid.....	Miles.....	2.08	16.58	2.02	1.94		22.62
Rock crushed.....	Cubic yards..				61,544		61,544
Cement used.....	Barrels.....	38,995	144		44,670	39	83,848
New roads built.....	Miles.....			.34	.27		.61
Water mains laid.....	Feet.....	1,000	760				1,760
Sewers laid.....	Feet.....	200	80				280
Open drains and ditches dug.....	Feet.....	12,333	78,653	3,625	1,190		102,801
Average daily force.....		4,973	6,205	896	6,192	1,311	19,607
Average rainfall.....	Inches.....	2.33	1.00	.19	0.07	0.19	1.09

*Accomplished by 6th division for the 2nd division

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the division engineer of the Atlantic Division, Resident Engineer Cole, and the erection subdivision of this office. The inspection of this work is being cared for by the masonry and lock structures subdivision. This subdivision is also charged with general inspection of masonry work of all the locks.

INSPECTION OF INSTALLATION OF RISING STEM GATE VALVES, ERECTION OF SPILLWAY GATES AND CAISSONS, AND ASSEMBLY OF HYDRO-ELECTRIC DRAFT TUBES AT GATUN.

Work was continued on the erection of the eight spillway gates at Miraflores, which was about 80 per cent completed at the close of the month.

There was no work done on the caisson for Miraflores.

Work on the preparation of rising stem gate valve machinery chambers was continued at Gatun, Pedro Miguel, and Miraflores; at the end of the month it was 94 per cent completed at Gatun, 70 per cent completed at Pedro Miguel and 25 per cent completed at Miraflores.

Inspection of the assembly and riveting of the draft tubes for Gatun hydroelectric station was continued.

LOCK GATES AND PROTECTIVE DEVICES.

Up to February 20, a total of 62,178 tons of steel plates and shapes had been accepted at the rolling mills. Shipments of riveted

structural steel from the Rankin shops totaled 51,487 tons, which is practically the contract weight required for the 92 leaves to be erected. Of this total, 113 tons were shipped during the month. There were also 642 tons of spare parts shipped during February. So far as erection, reaming and riveting are concerned, the contractors progressed satisfactorily, but the finishing of the leaves was not pushed as it should have been. The status of the work in the several locks may be summarized, as follows:

Gatun—Work was in progress on all the leaves, 40 in number. Erection, 81 per cent completed; reaming, 83 per cent completed;

riveting, 72 per cent completed; finishing, 10 per cent completed.

Pedro Miguel—Erection, 82 per cent completed; reaming, 92 per cent completed; riveting, 80 per cent completed.

Miraflores—Work was in progress on 20 of the 28 leaves. Erection, 55 per cent completed; reaming, 29 per cent complete; riveting, 20 per cent completed.

LOCK GATE RECESS COVERS.

There was no work done on recess covers at Gatun. At Pedro Miguel, the fitting in place of four covers was completed. At Miraflores, five covers were aligned and grouted.

CHAIN FENDERS.

Work in the field consisted of completing the concreting in the first chain fender pits Nos. 812 and 813. These chain fenders are completed, except work in connection with the auxiliary equipment, and the placing of the stairways and platforms.

INSPECTION AND ERECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The inspection force in the United States is being reduced as contracts are completed. The contractors are generally behindhand, but progress is being made in the rates of delivery. The rate of installing the machines keeps pace with the receipt of the various parts. The following tabulations are given as a summary of the work:

RISING STEM GATE VALVES.

	Gatun—56		Pedro Miguel—24	
	Assembled.	Placed.	Assembled.	Placed.
During mo.	9	12	0	0
To date....	46	52	22	22

		Miraflores—36	
		Assembled. Placed.	
During month.			
To date....			
FIXED IRON AND TRACKS FOR RISING STEM GATE AND GUARD VALVES.			
		Gatun—124	
		Pedro Miguel—60	
		Milled or Ground.	
During mo.			
To date....	120		46
		Miraflores—84	
		Milled or Ground.	
During month.			
To date....			18
GUARD VALVES.			
		Gatun—6	
		Pedro Miguel—6	
		Assembled. Placed.	
During mo.			
To date....			
		Miraflores—6	
		Assembled. Placed.	
During month.			
To date....			
RISING STEM GATE VALVE MACHINES.			
		Gatun—28	
		Partially Installed.	
During month.			
To date....	50	18	59
		Pedro Miguel—28	
		Received. Partially Installed.	
During month.			
To date....	24		22
		Miraflores—36	
		Received. Partially Installed.	
During month.			
To date....	5	8	13
RACK TRACK.			
(In one-foot units.)			
		Gatun—21,945 feet	
		Dist. Track laid. Frozen. Completed.	
During month.	50	50	108
To date....	18,738	18,738	10,138
		Pedro Miguel—13,213 feet.	
		Dist. Track laid. Frozen. Completed.	
During month.	231	660	268
To date....	10,472	10,472	9,069
		Miraflores—19,031 feet.	
		Dist. Track laid. Frozen. Completed.	
During month.	1,285	1,531	
To date....	3,452	2,874	1,400
CYLINDRICAL VALVE MACHINES.			
		Gatun—60	
		Received. Partially Installed. Installed.	
During month.			
To date....	60	3	57
		Pedro Miguel—20.	
		Received. Partially Installed. Installed.	
During month.			
To date....	20		20

Miraflres—40.			
	Received.	Partially installed.	Installed.
During month			
To date	40	20	20

MITER GATE MOVING MACHINES.

Gatun—40.			
	Received.	Partially installed.	Installed.
During month	9	4	
To date	22	27	5

Pedro Miguel—24.			
	Received.	Partially installed.	Installed.
During month	13		
To date	24	32	2

Miraflres—28			
	Received.	Partially installed.	Installed.
During month		16	
To date		16	

AUXILIARY CULVERT VALVE MACHINES.

Gatun—4			
	Received.	Partially installed.	Installed.
During month			
To date	4		4

Pedro Miguel—4.			
	Received.	Partially installed.	Installed.
During month			
To date	4	4	

Miraflres—4			
	Received.	Partially installed.	Installed.
During month		2	
To date		2	

MITER FORGING MACHINES.

Gatun—20.			
	Received.	Partially installed.	Installed.
During month			
To date	1		1

Pedro Miguel—12.			
	Received.	Partially installed.	Installed.
During month			
To date			

Miraflres—14			
	Received.	Partially installed.	Installed.
During month			
To date			

MITER GATE RECESS COVERS.

Gatun—36.			
	Placed.	Frozen.	Completed.
During month		2	8
To date	36	28	26

Pedro Miguel—20.			
	Placed.	Frozen.	Completed.
During month			
To date	20	20	

Miraflres—24.			
	Placed.	Frozen.	Completed.
During month			
To date	20		

SPILLWAY GATE MACHINES.

Gatun—14.			
	Received.	Partially installed.	Installed.
During month		1	
To date	14	3	*1

Miraflres—8.			
	Received.	Partially installed.	Installed.
During month			
To date	8		

*Except gate seat babbitted.

ELECTRICAL WORK—ATLANTIC LOCKS.

Conductor rails, insulators, brackets, and cover plates were installed on 3,960 feet of straight track, making a total of 23,006 feet. Of this, 10,806 feet have been equipped with steel conductor bar, and 12,200 feet with copper conductor bar. There were 9,789 feet of cable pulled into the conduit system, a total of 298,273 feet having been pulled at the end of the month. Cable pulling at the Gatun locks was discontinued and the cable pulling gang at that point disbanded. Nearly all of the cable pulled has been protected with tile in the manholes. Sixty-nine cable splices were made. Limit switches were installed on 43 rising stem gate valve machines, 17 miter gate moving machines, six handrail machines, four auxiliary culvert valve machines, and 56 cylindrical valve machines. Commutator switches were installed on 10 miter gate moving machines. Control boxes and conduit for nine handrail machines were installed. Conduit connections from limit switches to control panels are complete for 39 rising stem valve machines. Conduit was installed for power and control wire for 51 cylindrical valve machines; also, for four miter gate panels, and conduit made up for all auxiliary culvert valve panels. There were 18 rising stem valve motor control panels installed and conduit support slotted for control wire. Bed plates for 43 rising stem valve machines were drilled for supporting control conduits, transmitter, and control cable; also, the 4-inch hole for power cables. Slots were cut for power cable and cable drawn into 14 rising stem valve machine bases. Panels were installed for seven cylindrical valve motors and two auxiliary culvert valve motors. Work was started on installing the end bells for motor control panels. The following tests were made on sample towing locomotive No. 640: Electrical circuits checked out and locomotive put into operation; tests made of the power required by the locomotive on the incline and when towing one-third of the rated load; put on service test raising and lowering this load, alternating with trips up the incline. During the month, approximately 6,000 trips were made. Tests were made on nine rising stem valve machines, two miter gate moving machines, and one handrail machine, and all were operated in a satisfactory manner. This makes a total of 31 rising stem valve machines, 36 cylindrical valve machines, four auxiliary culvert valve machines, four miter gate moving machines, and one handrail machine which had been tested on February 28.

ELECTRICAL WORK—PACIFIC LOCKS.

Pedro Miguel—Conductor rails, insulators, brackets, and copper plates were installed on 3,047 feet of track, making a total of 11,477 feet. Of this amount, 5,176 feet have been equipped with steel, and 6,301 feet with copper conductor rail. There were 2,400 feet of fibre conduit installed during the month. There were 1,000 feet of this conduit prepared for the reception of cable. Four control panels for auxiliary culvert valve machines and three control boxes for handrail machines were installed.

Miraflres—Steel conductor bar, insulator brackets, and plates, were installed on 1,320 feet of track. There were 8,740 feet of duct rodged, cleaned, and wired preparatory to pulling cable. One test panel was mounted. Tests were made on 13 cylindrical valve machines at Miraflres, 12 of which operated satisfactorily. Experiments were continued on the waterproofing of tunnels.

Tests were made on six rising stem gate valve machines at Pedro Miguel.

EMERGENCY DAMS.

Inspection was in progress at four localities in the United States and 593 tons of material were accepted. At the end of the month 12,447 tons had been fabricated and accepted. About 721 tons were delivered on the Isthmus during the month and approximately 445 tons were erected. On February 28, a total of 7,933 tons had been delivered, and 4,058 tons erected. Approximately 55 per cent of the material required for all emergency dams has been received, of which about 30 per cent has been erected. Work was in progress on the east and west dams at Gatun, and the west dam at Pedro Miguel.

AIDS TO NAVIGATION.

At the close of the month, 11 towers of the Atlantic and Pacific type were completed, except that one steel lantern door remained to be hung, stair railings erected and permanent lights installed; the circular stairway of one tower also remained to be completed. Ten range towers of the Gatun Lake section type, with foundations, were completed, except that doors were still to be hung, steel ladders erected, lantern glass set in place in four towers, painting in seven towers, and permanent lights installed in all. One foundation was completed for tower of the Atlantic and Pacific type. Three skeleton tower beacons, including foundations, for the Pacific end, were completed, except that permanent lights remained to be installed. Three additional concrete steel reference targets 20 feet high were completely erected, a total of nine. Electric fittings were placed in the towers and beacons of the electric light line between the Aguadulce pumping station and range No. 1-2 and beacons Nos. 5 and 7, Pacific end; electric lights were placed in these structures. Work was in progress on range towers Nos. 2 and 16 Gatun lake section, wiring electric light line Pacific end, and making the necessary surveys and reconnaissances. Six gas buoys were also assembled at Balboa.

Second Division—Office of the Chief Engineer.

BALBOA TERMINALS.

The following work was accomplished during the month:

EXCAVATION.	Cu. Yds.
Preparing site	11,842
Drydock No. 1	15,572
Drydock No. 1, approach	3,210
Shop foundations	3,134
Test pit foundations	50
Quay wall	1,692
Pier No. 1	521
Total	36,003

FILLING AND EMBANKMENT.	Cu. Yds.
Preparing site	32,274
Dikes	6,187
Sand line	1,796
Townsite dike (Sixth Division)	1,580
Fifth Division	1,400
Total	43,237

CONCRETE PLACED.	Cu. Yds.
Caissons, reinforced shells	1,277
Caissons, reinforced filler	85
Shop foundations	282
Shop foundations, test pits	11
Total	1,655

General Remarks—Approximately 197,000 pounds of reinforcing were placed. Work was continued on the quay wall and begun on pier No. 1. There were 11,939 lineal feet of rock drilled, 17,850 pounds of dynamite used, 29,435 lineal feet of piling driven, 10,658 feet of track laid, 1,800 feet of road built, 4,625 feet of ditches dug and one trestle bent.

METEOROLOGY AND HYDROGRAPHY.

The usual observations and measurements were made and taken.

Fifth Division—Office of the Chief Engineer

DISTRICT NO. 1, LOCKS, DAMS, AND DRY EXCAVATION.

Excavation—The total excavation during the month amounted to 346,280 cubic yards, of which 238,006 cubic yards were classified as rock and 108,274 cubic yards as earth.

Filling and embankment—The backfill at Pedro Miguel was increased by 52,818 cubic yards, the total quantity in place at the close of the month being 854,236 cubic yards.

At Miraflores, the dry filling in the toes of the west dam was increased by 35,000 cubic yards, making the total quantities of dry and hydraulic filling in place at the end of the month 1,575,614 cubic yards, and 661,048 cubic yards, respectively. The backfill was increased by 77,951 cubic yards, the total amount in place at the close of the month being 1,256,547 cubic yards.

Pedro Miguel Locks—Excavation was continued in the Canal prism, south of the locks, and in the foundation of the lower guide wall. Backfilling of the two side walls and north wing walls was continued. Concrete work consisted of the construction of the south wing wall extension, installation of towing and return tracks, drainage tunnel and electric cable ducts. The total amount of concrete laid was 4,294 cubic yards placed, as follows: Two hundred and sixty-seven cubic yards in the walls, 33 cubic yards in the floor, 3,883 cubic yards in the south approach wall, 22 cubic yards in the east intake bridge, and 89 cubic yards in the operating tunnel.

OPERATION OF THE AUXILIARY CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours).....	8 00
Average number of hours per day worked laying concrete (actual working time).....	4.88
Average number of mixers per day.....	3.00
Average hourly output per mixer, actual working time (cubic yards).....	12.76
Concrete laid (cubic yards).....	4,294.00

Plant consisted of three $\frac{1}{2}$ -cubic yard mixers, the output of which was discharged by mixers directly into forms, or handled to forms by Decauville equipment.

Miraflores Locks—Dry excavation was continued in the Canal prism, south of the locks, the material being used for backfilling the locks, filling on the west dam, and for swamp reclamation. Excavation of the spillway was continued. Concrete work consisted of the construction of north wing walls, spillway dam, and the extension of west wall, south guide wall, operating tunnels, floor of lower west chamber, and northeast core wall. Fixed irons aggregating 203,380 pounds were placed in the masonry. The total amount of concrete laid was 39,510 cubic yards placed, as follows: Twenty-nine thousand one hundred and five cubic yards in the walls, 2,426 cubic yards in the floors, 755 cubic yards in the east core wall, 2,349 cubic yards in the operating tunnel, 562 cubic yards in the northwest wing wall, 376 cubic yards in the northeast wing wall, 161 cubic yards in the east intake bridge, 123 cubic yards in

the emergency dam quadrant, and 3,653 cubic yards in the spillway.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant
Length of working day (hours).....	8 00	8 00
Average number of hours per day worked laying concrete (actual working time).....	4 34	7 68
Average number of mixers per day.....	7 65	3 39
Average hourly output per mixer, actual working time (cubic yards).....	40 37	15 53
Average amount of concrete laid per hour per berm or chamber crane, actual working time (cubic yards)....	59 85	.....
Concrete laid (cubic yards)....	28,519.00	10,991.00

Auxiliary plant consisted of a daily average of 1.47 $\frac{1}{2}$ -cubic yard mixers and a daily average of 1.92 $\frac{1}{2}$ -cubic yard mixers, the output of which was discharged directly into forms, or placed by derricks and locomotive cranes. Permanent plant consisted of four berm and four chamber cranes.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

Reservoirs, water mains, sewers, and oil pipe lines were maintained and extended as required to facilitate construction work.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT

Length of working day (hours).....	12.00
Average number of hours per day, actual working time.....	9.56
Average number of cubic yards crushed per hour per working day.....	222.99
Average number of cubic yards crushed per working hour.....	279.86
Total output for the month (cubic yards)....	61,544.00

Sixth Division—Office of the Chief Engineer.

The following is a statement of the output of the six dredges which were in operation during the month:

DREDGE.	Type.	WORK.			PLANT.		Total.	Remarks.
		Earth.	Clay.	Rock.	Earth.	Rock.		
		Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	
Badger.....	Ladder.....	5,453	22,145	22,698	.....	.....	50,346	Place measurement
Cardenas.....	Dipper.....	.....	17,243	8,622	.....	.....	25,865	Place measurement
Corozal.....	Ladder.....	.....	33, 90	37,397	.....	.....	133,561	Place measurement
Culebra.....	Suction.....	.....	.....	.....	.....	.....	.....	.....
Marmot.....	Ladder.....	.....	16,741	2,839	.....	.....	19,580	Place measurement
Mole.....	Ladder.....	62,774	.....	9,700	.....	.....	9,700	Scow measurement
No. 85.....	Suction.....	.....	.....	.....	175,225	.....	175,225	Place measurement
Total.....	.....	68,257	59,519	81,255	175,225	.....	414,257	.....

CHAMÉ SAND EXCAVATION.

Approximately 35,100 cubic yards of sand were excavated at Punta Chame and delivered to the Balboa sand bins.

BALBOA SHOPS.

The manufacturing and repair work in the shops and shipways was satisfactorily performed during the month.

Atlantic Division.

GATUN LOCKS.

Excavation—There were 47,142 cubic yards excavated during the month. Of this amount, 11,211 cubic yards were removed from the lock site in the preparation of foundations for the north approach walls; the balance was borrow pit excavation for backfill and construction tracks.

Backfill—Backfilling behind the side walls was continued, the quantity placed during the month aggregating 34,498 cubic yards. The total amount placed to March 1 was 2,009,496 cubic yards. On that date the work was 96.94 per cent completed.

Receiving and issuing material—The issues of rock for the month amounted to 28,922 cubic yards. There were 15,686 cubic yards of sand issued. Cement receipts totaled

38,571 $\frac{1}{2}$ barrels and the issues amounted to 35,214 $\frac{3}{4}$ barrels.

Mixing and placing plants—Mixer No. 1 and the portable mixers were kept in satisfactory operation during the month, but, owing to shortage of cement, mixer No. 1 could not be operated to its full capacity from the 11th to the 15th of the month.

Concrete work—A total of 30,680 cubic yards of concrete was laid, distributed, as follows: Upper lock, six cubic yards; middle lock, eight cubic yards; lower lock, 30,666 cubic yards. On February 28 the concrete work was 96 per cent completed.

OPERATION OF CONCRETE CONSTRUCTION PLANT.

Length of working day (hours).....	9.00
Average number of hours per day worked, per strand of cableway, laying concrete, actual working time.....	5 80
Average number of mixers per day.....	4.00
Average hourly output per mixer, actual working time (cubic yards).....	60.12
Average amount of concrete laid per hour, per strand of cableway.....	28.60
Concrete laid (cu. yds.) cableways.....	30,596
Concrete laid (cu. yds.) derricks.....	174
Concrete laid (cu. yds.) portable mixers.....	244
Concrete laid (cu. yds.) hand mixed.....	127

Total amount of concrete laid (cu. yds.)... 31,141.00

GATUN DAM.

Construction during the month increased the total fill, as determined by car measurement and borrow pit cross-section, by 104,968 cubic yards, making the total amount in place 21,326,377 cubic yards. On March 1, the Dam was 96.8 per cent completed.

Hydraulic fill—There was no increase made in the hydraulic fill, the total in place remaining at 10,124,082 cubic yards.

Dry fill—There were added to the dry fill 88,792 cubic yards of material received from

steamshovels; this was placed on the north and south toes of the Dam, east and west of the spillway, making the total dry fill in place 11,182,399 cubic yards.

Hydroelectric plant—During the month, 30 cubic yards of rock were removed by hand in the preparation of foundations, making a total excavation of 97,991 cubic yards. There were 351 cubic yards of concrete placed, making a total of 1,163 cubic yards.

GATUN SPILLWAY.

Backfill—No backfilling behind the spillway walls was done, the total on February 28, remaining at 16,495 cubic yards.

Concrete—A total of 3,028 cubic yards of concrete was laid during the month. Concrete work for the spillway is 97.2 per cent completed.

Excavation—There was no material excavated during the month, the total remaining at 1,591,261 cubic yards.

HARBOR AND CHANNEL SECTION.

Dredging from the ocean to Mindi—Seven dredges removed 250,491 cubic yards of earth, and 53,458 cubic yards of rock from the Canal prism. In addition, the dredge *Caribbean* removed 248,873 cubic yards of earth from the

Cristobal approach channel. On February 28, forty feet of water could be carried from zero to zero plus 2,100 feet, 35 feet to mile post 4 plus 3,400 feet, 30 feet to mile post 6 plus 2,300 feet, 20 feet to mile post 6 plus 2,350 feet, 10 feet to mile post 6 plus 2,800 feet. The *Terrier* drilled 2,290 feet, used 21,095 pounds of dynamite and shot 16,290 cubic yards of rock to minus 45 feet, mean sealevel.

West breakwater, Colon—There were 17,633 cubic yards of Porto Bello rock unloaded, of which 11,158 cubic yards were handled by cranes, and 6,475 cubic yards by the derrick barges, making the total amount unloaded to March 1st, 170,606 cubic yards.

MUNICIPAL ENGINEERING.

New Colon waterworks—Excavation for the sedimentation basin was commenced, and 1,154 cubic yards of material were removed. The walls of the clear water basin were constructed to elevations plus 16 and plus 11. The foundations were laid for the walls and pumps in the pump station, and the floor of the sump in this building was completed. A total of 367 cubic yards of concrete was laid.

The reservoirs, water mains, sewers, roads, and oil pipe lines were maintained and extended as required to facilitate construction work.

Central Division.

During the month, the total amount of material excavated was 996,800 cubic yards, of which 190,131 cubic yards were classified as earth, and 806,669 cubic yards as rock. The entire amount was removed by steamshovels. Of this total, 990,496 cubic yards were primary excavation in the Canal prism, and 6,304 cubic yards were from the Obispo Division.

The daily average number of steamshovels at work was 38.8, and the total number of shovel days was 892½, as compared with 35.44 shovels at work, and 921½ shovel days in January. For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table is presented:

Period	No. of steamshovels.	Classification of material		Av. No. of shovels at work	Work days	Av. Yards per shovel day
		Rock.	Earth.			
		Cu. Yds.	Cu. Yds.			C. Y.
Feb. 1913.	1,392.455	1,158.89	163,126	43.7	24	1,326.15
Jan. 1912.	888.8	888.8	1,111	38.8	23	1,111.00

Rainfall at Empire 1912, 34 ins.; 1913, 77 ins.

The above table shows the average output per shovel to be 15.77 per cent less in February, 1913, than in the corresponding month of 1912.

The total amount of material excavated from Culebra Cut in February, 1913—996,800 cubic yards—is the lowest record in that section for the month of February since 1907; in February of that year 646,806 cubic yards were removed.

The entire amount of material removed, and to be removed, in the Central Division, according to estimate of July 1, 1912, was 106,416,221 cubic yards. Owing to the development of new slides and the renewed activity of others which had for many months been at rest, a large amount of material has recently been brought into the Canal prism, as a result of which it became necessary on February 1 to revise this estimate by adding 5,635,251 cubic yards, making a total of

112,051,472 cubic yards removed and to be removed, which includes approximately 300,000 cubic yards of wet excavation in the Chagres section.

The estimated amount of dry material removed, and to be removed, according to the revision of February 1, is 111,751,472 cubic yards. Up to March 1, 1913, 103,048,272 cubic yards had been removed, leaving 8,703,200 cubic yards to be removed, in order to complete all dry excavation in this division. At the close of the month 92.21 per cent of all dry excavation was completed. On February 28, the status of the work in the two sections which compose this division was, as follows:

Culebra Cut	Chagres Section
Completed 100 per cent	Completed 95 per cent
Excavation is completed	Excavation is completed

There were furnished during the month to the Panama Railroad Company, for the Cristobal mole, 22,743 cubic yards of stone, the total amount furnished to February 28 for this purpose being 212,099 cubic yards.

There were 45,513 cubic yards of material dumped from Naos Island trestle, making a total of 1,223,080 cubic yards. Work was continued on the double track trestle, 416 lineal feet being driven during the month.

There was employed a daily average of 6,205 laborers, while the average number of gold men working was 589.

Quartermaster's Department.

Labor—The force report of February 26 showed 38,299 men actually working for the Commission and the Panama Railroad Company. The actual working forces of the several contractors totaled 5,112 men. The arrival early in the month of the 428 laborers from Barbados relieved the shortage in unskilled labor, although there is still an unsatisfied demand for 10-cent laborers.

Buildings—Two type 5 houses were removed from Gorgona and reerected at Corozal. The construction of a new radiostation Balboa was begun.

Quarters—In spite of the erection of two bachelor quarters at Corozal, congestion in quarters continues at that point. This crowded condition is due to the fact that the contractors are now transferring their men from Gatun to the Pacific locks. On February 28, there were in all Commission quarters approximately 1,400 more people than in July, 1912, the greatest increase being in the Corozal district.

Material and supplies—The value of material received was \$1,160,031.96. This material came forward in 36 steamers, the total weight of cargo, exclusive of lumber, piling, and ties, being 34,235 tons.

Subsistence Department.

The Hotel Tivoli showed a net profit of \$23,994.82. The operation of the line hotels, European laborers' messes, colored laborers' kitchens, restaurants, tugs, and dredges returned a net profit of \$2,475.61. The total net profit on subsistence operations during the month was \$26,470.43.

Department of Civil Administration.

COURTS.

During the month, 60 civil and 42 criminal cases were disposed of in the Circuit Courts, and 81 civil and 503 criminal cases in the District Courts.

POSTS, CUSTOMS, AND REVENUES.

Money order sales amounted to \$428,241.99, and the fees to \$2,021.89. Receipts from

stamp and card sales and newspaper postage aggregated \$8,851.52. The total collection of revenues made was \$17,128.99, and the collections on account of court fines, costs, and fees \$2,748.89. A total of \$144,405 was deposited in postal savings accounts and a total of \$84,290 was withdrawn. At the port of Ancon, 20 vessels entered and 17 cleared; at the port of Cristobal 34 entered and 38 cleared.

POLICE AND PRISONS.

The total number of persons arrested was 536, of whom 470 were men and 66 women. Twenty-one nations, or 44 separate states and dependencies, were represented. There were six convicts committed to the penitentiary, and eleven were discharged, leaving 119 convicts in confinement at the close of the month. The cost of guarding and subsisting these prisoners was \$2,738.03 and the value of the work performed by them on the roads of the Canal Zone was \$2,042.40.

FIRE PROTECTION.

There were 33 fires reported in the Canal Zone. The total damage occasioned by these fires was \$20,415.98.

PUBLIC WORKS.

In the city of Panama the daily average consumption of water was 2,002,821 gallons, and in Colon, 1,280,578 gallons. The usual inspection and maintenance work in this division was performed.

SCHOOLS.

The net enrollment in the white schools was 1,319, the average number of pupils belonging was 1,122.2, and the average daily attendance 1,046.6. In the colored schools the net enrollment was 1,417, the average number belonging was 1,005.9, and the average daily attendance 809.6. At the close of the month, there were employed in the white schools 47 teachers and in the colored schools 31 teachers, the total being the same as employed at the close of the preceding month.

Department of Sanitation.

The total number of deaths from all causes among employes was 42, divided, as follows: From disease 27, and from violence 15, giving an annual average per thousand of 5.86 and 3.25, respectively. The annual death rate per thousand among employes for the month of February, 1912, was 10.57.

The annual average death rate per thousand in the Canal Zone and in the cities of Colon and Panama, including both employes and nonemployes was 21.10. This rate is based upon a population in the Canal Zone of 62,810, according to the census of February, 1912, and populations in Colon and Panama, respectively, of 20,232 and 47,172, as estimated by the Department of Sanitation. The annual average death rate per thousand among the same classes of population for the month of February, 1912, was 16.33.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was: Whites, 6.52; blacks, 5.65, giving a general average for disease of 5.86. For the same month during 1911 the annual average death rate per thousand from disease among whites was 5.67; blacks, 6.47, giving a general average of 6.27; and for the same month during 1912, whites, 4.61; blacks, 7.34, giving a general average of 6.66.

Among employes, deaths from the principal diseases were, as follows: Abscess of liver,

entamoebic, one; hæmoglobinuric fever, one; pneumonia, four; malaria, one; tuberculosis, five, leaving 15 deaths from all other diseases, and 15 deaths from external violence. On December 15, 1912, all the sick camps were closed, except those at Culebra, Toro Point, and Porto Bello.

No case of yellow fever, smallpox or plague, originated on, or was brought to the Isthmus during the month.

Respectfully,

GEO. W. GOETHALS,
Chairman and Chief Engineer.

SOCIAL LIFE OF THE ZONE.

Church Notes.

The last of the weekly meetings of the Woman's Altar Guild of St. Luke's Hospital Chapel was held at the home of Mrs. Frank Feuille, on Tuesday morning, March 18, at which time it was decided to hold further meetings on the first and third Tuesdays in each month at 9.30 a. m. These meetings will be devoted to sewing for charitable purposes.

A brake will be run from Culebra to Empire on Friday evening, March 28, leaving at 7.30 o'clock, for the convenience of those

who may desire to attend services at St. Mary's Church.

Gatun Basketball Club.

The Gatun basketball club gave an entertainment at the Commission clubhouse on Saturday evening, March 15, which consisted of a burlesque basketball game, ladies vs. men, followed by a masquerade ball. Prizes were awarded, as follows: For the most attractive costume, Mrs. E. McTucker, "Quaker girl," for the most original costume, Mrs. J. Ward, "Sunflower girl," for the best men's costume, W. J. Humphreys, "Spanish cavalier," for the most original costume, C. V. O'Meara, "Irish gentleman."

Girls' Athletic Club.

A girls' athletic club of about 18 members meets at the Commission clubhouse, Gorgona, on Saturday afternoons from 5.15 to 6.30 for physical culture training. Following the class work, under the physical director of the clubhouse, the girls play basketball for a half hour.

Married.

CLEGHORN-WITMER—At the Union Church, Cristobal, on March 24, Miss Jennie Esler Witmer of Pittsburgh, Pa., to Mr. Robert John Levy Cleghorn of Barnstable, England, the Rev. Carl H. Elliott officiating. Residence, New Jersey.

FOX-GEHRKE—At the Union Church, Cristobal, on March 25, Miss Esther Amelia Minnie Gehrke of La Porte, Ind., to Mr. Maurice Winslow Fox of Detroit, Mich., the Rev. Carl H. Elliott officiating. Canal Zone residence, Culebra.

SNYDER-BEELER—At the Union Church, Cristobal, on March 20, Miss Lydia Alice Beeler of Greencastle, Ind., to Mr. Hubert Earl Snyder of Hagerstown, Md., Rev. Carl H. Elliott officiating.

Misdirected Letters.

ANCON, C. Z., March 26, 1913.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Baker, Miss Bessie R.	Knapp, G. E.
Barrow, Fred W.	Lingerfelt, Jake
Becker, J. G.	Miller, Mrs. Clara
Bennett, Samuel	O'Shea, Val E.
Burns, Robert	Reynolds, James
Byrnes, L. J.	Roberts, C. W.
Daughtery, Mrs. W. W.	Ross, Mrs. Chase C.
DuLude, L.	Reise, Geo. F.
Dunlop, Andrew	Schneider, Rev. F. M.
Entrikin, Herman	Taylor, N. S.
Fahey, M. J.	Thomas, James
Fitzpatrick, John	Todak, John
Foster, Mrs. R.	Tomy, Master William
Frye, Mr. and Mrs.	Van Ness, Albert
Hartman, Mrs. Galen C.	Vassan, Johan
Hudson, William I.	Viberg, George L.
Hyder, F.	West, Mrs. Ida
Jordan, James	White, C. J.
Kennedy, Edward	Williams, John William
Killingbeck, Arthur A.	

CONCRETE WORK IN THE LOCKS AND SPILLWAYS.

About 99 per cent of the total of 4,446,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on March 22, the amount in place being 4,392,940 cubic yards.

GATUN LOCKS AND SPILLWAY.

Over 97 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on March 22, being 1,993,421 cubic yards, out of a total of 2,043,730. In the spillway of Gatun Dam there had been placed 221,996 cubic yards out of a total of 225,000 cubic yards. A statement of the amount placed each working day of the week ending March 22, and of the total follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			Large stone.	Total.	SPILLWAY.		
	Concrete placed	Hours worked.	No. of mixer.			Concrete laid	Hours worked	No mixers used.
	<i>Cu. Yds.</i>			<i>Cu. Yds.</i>	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>		
March 17.....	1,130	18.84	4	.....	1,130	151	6.75	1
March 18.....	1,402	23.36	4	.....	1,402	132	5.50	1
March 19.....	1,432	23.88	4	.....	1,432	118	7.25	2
March 20.....	1,388	23.12	4	.....	1,388	118	6.75	1
March 21. (Holiday).....			4	.....			
March 22.....	1,164	19.40	.....	.....	1,164	163	7.00	2
Total.....	6,516	108.60	4	.....	6,516	682	33.25	
Previously reported.....				.....	1,986,905	221,314		
Grand total.....				.....	1,993,421	221,996		

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 916,883 cubic yards, having been placed at the close of work on March 22. The record for each working day of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixer.	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.
March 17.....	173			173	15.50	2	9		182
March 18.....	196			196	18.50	2	10		206
March 19.....	201			201	18.00	1	3		204
March 20.....	210			210	17.00	2	7		217
March 21 (Holiday).....									
March 22.....				216	18.50	2	16		232
Total.....				996	88.50	2	45		1,041
Previously reported.....								4,493	915,842
Grand total.....								4,493	916,883

MIRAFLORES LOCKS AND SPILLWAY.

About 99 per cent of the concrete for the system of two twin locks at Miraflores was in place on March 22, the total amount on that date being 1,482,636 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers			AUXILIARY PLANT. ½-cubic yard mixers.			Mixed by hand.	Large stone.	Total.	SPILLWAY. AUXILIARY PLANT.						Total.
										1-cubic yard mixers.			½-cubic yard mixers			
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers				Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	
March 17	Cu. Yds. 566	24.50	6	Cu. Yds. 90	13.00	2	Cu. Yds. 656	Cu. Yds. 240	Cu. Yds. 656	Cu. Yds. 240	12.00	2	Cu. Yds. 504	Cu. Yds. 504		
March 18	332	25.50	8	132	17.00	2	464	225	464	8.00	1	533	533			
March 19	538	30.00	6	131	16.00	2	669	324	669	13.50	2	748	748			
March 20	478	30.17	6	117	14.50	2	595	293	595	13.50	2	725	725			
March 21 (Hol'd'y)																
March 22	264	22.67	6	74	9.00	1			338	244	11.00	2		532		
Total	2,178	132.84	6.4	544	69.50	1.8			2,722	1,326	58.00	1.8		*3,042		
Previously reported								3,693	1,479,914					12,319		
Grand total								3,693	1,482,636					15,361		

*Includes 1,716 cubic yards laid by the Miraflores Locks construction plant—2 cubic-yard mixers; time included under locks.

PERMANENT WATER SUPPLY.

Gatun Lake Water to be Used as Auxiliary to Rio Grande in Pacific Section.

The committee, consisting of Mr. H. H. Rousseau, chairman; H. O. Cole, George M. Wells, James T. B. Bowles, and Luis Ernst, appointed to consider plans and make recommendations for a permanent water supply for the Pacific end of the Canal, has submitted its report, and same has been approved by the Chairman.

The plans contemplate the continued use of the Rio Grande reservoir, and the increasing of its capacity by raising the dam to elevation 265 feet, or 27 feet above the present crest. It is believed that with the increased capacity the reservoir will supply at least 6,000,000 gallons of water a day, except in years of minimum rainfall, such as 1888 and 1912.

It is further proposed to use the Camacho reservoir as an auxiliary supply. The surface of the water in this reservoir at high level is 100 feet above that in the Rio Grande, so that a gravity flow between the two reservoirs could be maintained by means of a pipe line, or by a small concrete-lined aqueduct laid around the main hills for a distance of about 13,000 feet. It is estimated that about 1,500,000 gallons of water a day would be added to the Rio Grande supply in this manner. Before final adoption of the Camacho pipe line, the committee recommended that an estimate be made of the cost of laying the line, as compared with an estimate of the cost of pumping the same amount of water a day from Gatun Lake.

Assuming that 7,500,000 gallons of water a day might be obtained from the above sources, the committee turned its attention to the matter of a further supply. The possibility of procuring water from the Pedro Miguel and Cocoli rivers was discussed, but the idea was abandoned in favor of Gatun Lake.

The plan of pumping water from the lake at a point on the west side of the Canal, just north of the entrance to Pedro Miguel Locks, would involve the installation and operation of electrically-driven pumps, but it would provide an absolutely certain supply during all months of the year, and would take care of a consumption far beyond the present estimate.

In studying the consumption charts for the past few years, based upon the total amount of water fed through the mains from Rio Grande and Cocoli, the committee found that the total consumption from Pedro Miguel south, exclusive of the Central Division engines hosted at Pedro Miguel, has increased rapidly from year to year, and now approximates 8,000,000 gallons a day. The consumption in Panama City has risen from 700,000 gallons to 2,000,000 gallons a day in six and one-half years. It was the opinion of the committee that the completion of the work at Pedro Miguel and Miraflores, resulting in the elimination of all steamshovels and locomotives, will not reduce the above amount by more than 800,000 or 900,000 gallons a day, or approximately 1,000,000 gallons a day, allowing for the amount of water used in lock construction. On the other hand, the concentration of the main shops, terminals, administration force, coast artillery force, Marine camp, etc., will, it is believed, more than offset the reduction in consumption due to closing down the Canal work, and that, therefore, the consump-

tion will probably not be less than 8,000,000 gallons a day when the Canal opens. If a force of 7,000 troops is stationed at Miraflores, it will use at least 700,000 gallons of water daily. If these troops should be stationed at East Culebra, it would still in all probability be more economical to supply water to them from the mains at Pedro Miguel, by pumping into a reservoir placed at or near Gold Hill, than to construct a reservoir on Pedro Miguel River, or some other stream. It is believed that a large increase may be expected in the amount required by Panama city. Provision is being made to furnish water along Las Sabanas road, and the indications are that the city may extend in that direction. The existence of docking and repair facilities at Balboa will no doubt lead to ships requiring fresh water before going to sea, but the scope of this demand cannot be foretold. At Gatun, including New Gatun, where a large number of houses are metered, the average daily consumption per capita is approximately 100 gallons. This does not include manufacturing plants. Based upon this, and on an estimated total of 68,929 people to be served, the amount of water required would aggregate nearly 7,000,000 gallons a day, exclusive of shops, railroad terminals, shipping, Naos Island, and the infantry camp. In view of the above, the committee recommended that the maximum normal supply should not be less than 12,000,000 gallons a day, and that the purification plant, pump station, and accessories be designed not only for that amount, but that provision be made for their future extension and enlargement without interference with the continuity of the supply.

The experience gained during the past six years, and particularly during the last year of the Agua Clara plant at Gatun, conclusively indicated in the minds of the members of the committee that the stream waters of the Isthmus yield readily to aeration, and aluminum sulphate treatment, followed by sedimentation and sand filtration. Heretofore, little attention has been given to the bacterial efficiency of the treatment, because practically all the water used for drinking purposes has been taken from uninhabited watersheds, with very little risk from contamination. In the proposed new water supply, the use of Gatun Lake water makes the matter of bacterial efficiency an important one. It is believed that a properly designed purification plant, with aeration and sedimentation, using aluminum sulphate, followed by rapid sand filtration, will take care of such water, but to provide against the possible contingency of pathogenic bacteria getting into the filtered water mains, it is proposed to use a bleaching agent—hypochlorite of lime—in addition to the aluminum sulphate, this agent to be used only when the daily analysis of the water indicates the presence of *B. coli*. The cost of this treatment would be small.

The committee considered the relative merits of pressure filters, as compared with the rapid mechanical gravity filters. It was shown that the first cost would be less, and that there would be an approximate saving in head of from nine to 15 feet by the adoption of the mechanical gravity type. It was further shown that filters of this type are rapidly supplanting those of the pressure type. The committee recommended their adoption.

It was believed that in using both the present 20-inch and 16-inch mains from the Rio

Grande reservoir into Panama, the best plan would be to install pumps on these lines just south of the proposed purification plant to act as "boosters" to the gravity head available, these pumps to be designed to deliver the maximum supply south of Corozal, with a terminal pressure practically zero at some point near the present low level reservoir at Ancon. At the latter point, it is proposed to install a second "booster" station with pumps directly on the main to lift water to the low and high level reservoirs. This line would be by-passed, so that the pumps could pump directly into the mains fed from the above reservoirs. All pumps and stations would also be by-passed, so that in case of trouble to the pumps, the head due to gravity would deliver some water through the mains. The "booster" pumps will obviate the necessity of laying an additional feeder line, at least until the estimate of 12,000,000 gallons of water a day is exceeded. "Booster" station No. 1 would probably be located on the west bank of the Canal, north of Pedro Miguel Locks, and would contain the supplementary pumps furnishing Gatun Lake water to the purification plant. "Booster" station No. 2 would likely be situated at some point near the present pump station at Ancon.

At the present time there are at Ancon two high pressure reservoirs, each of 1,000,000 gallons capacity, one situated on the east side of Ancon Hill at an elevation of 295 feet above sealevel, and the other on a knoll back of Hotel Tivoli, at an elevation of 138 feet. The committee was of the opinion that additional high pressure storage is necessary, and recommended the construction of a new 1,500,000-gallon reservoir immediately adjacent and connected to the present high level reservoir on Ancon Hill.

There is installed in the masonry of the emergency dam at the north end of Pedro Miguel Locks, a 24-inch diameter cast iron main carrying the water from the Rio Grande across the locks. It was the opinion of the committee that, as a measure of safety, and to provide for a possible future increase, an additional cast iron main, 30 inches in diameter, should be carried across the locks to a junction with the present 16-inch and 20-inch water mains.

The committee investigated a number of sites with reference to the location of the proposed purification plant, but refrained from making a recommendation, except that the plant be situated at the best point available on the west side of the Canal, north of Pedro Miguel Locks.

The committee recommended that such work be done as will make the old 16-inch main continuous from the Rio Grande reservoir to Panama, and that it be cross-connected to the new 20-inch main throughout its length. This will necessitate the laying of 3,940 lineal feet of new 16-inch main from the Rio Grande reservoir south along the present 20-inch main, the taking up and relaying of 2,700 feet of the old main from Pedro Miguel Locks north to join that part of the old main now in position, the taking up of approximately 11,600 feet of the 16-inch main now in use, lying within the Miraflores Lake area, and relaying it parallel to the 20-inch main along the Panama railroad and across the Miraflores tunnel hill, finally joining the present 16-inch main south of the Miraflores power house; and the laying of 3,100 feet of 16-inch pipe

from the block signal plant to the old low level reservoir at Ancon.

In view of the fact that the elevation of the purification plant, the size of the "booster" pumps, and finally the quantity of water that the mains may be expected to deliver in Panama depends on the correct value of the coefficient of friction for these lines, the committee recommended that friction tests be made, and that the results obtained be adopted in connection with the computations involved in the design of the different plants.

PERSONAL.

Gen. C. A. Devol returned from leave of absence on the *Colon*, which arrived at Cristobal on Monday, March 24.

The "Zonian."

The Canal Zone High School has issued the first number of its paper, *The Zonian*, for 1913, this making the seventh number issued since its establishment in 1910. *The Zonian* contains the usual features, including several local photographs. The list of exchanges printed in the exchange column includes papers from 21 high schools in the United States.

Missing Men.

Any one having information regarding the whereabouts of James B. Osborne of Upland, California, who is supposed to be on the Isthmus of Panama, is requested to communicate with the American Legation.

Any one having information regarding the whereabouts of Henry Willard French, who is supposed to be on the Isthmus, is requested to communicate with the American Legation, Panama.

Any one having information regarding the whereabouts of T. A. Brooks, who is supposed to be on the Isthmus, is requested to communicate with the Director of Posts, Ancon.

OFFICIAL CIRCULARS.

Assistant Division Engineer of the Atlantic Division.

CULEBRA, C. Z., March 19, 1913.

CIRCULAR No. 480:

Lieutenant Colonel William V. Judson is assigned to duty as Assistant Division Engineer of the Atlantic Division.

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Filling Out of Twenty-four Trip Tickets.

CULEBRA, C. Z., March 20, 1913.

ALL CONCERNED:

Attention is invited to the instructions appearing on the cover of I. C. C. employees' twenty-four trip ticket, reading, as follows:

"Employee will fill in on coupon stations between which it is desired to travel and sign same before entering train."

It is reported that employees are not complying with these instructions, which results in considerable delay in the collection of transportation. In the future, failure to comply with these instructions will be reported to this office and proper discipline administered.

GEO. W. GOETHALS, Chairman.

Requests for Half-Rate Mileage Books.

CULEBRA, C. Z., March 24, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

A revised edition of Form C. E.-319, "Request for half-rate mileage books," is now in stock, the new form number being C. E.-319-1.

You are requested to requisition Mount Hope for a supply of the revised form, and upon receipt of same you will destroy any copies of Form C. E.-319 in your possession.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The standing of the clubs in the Isthmian duckpin bowling league on March 24 was, as follows:

Team.	Won.	Lost.	P. C.
Gorgona.....	7	2	.777
Culebra.....	7	2	.777
Cristobal.....	5	4	.555
Empire.....	5	4	.555
Gatun.....	2	7	.222
Corozal.....	1	8	.111

The moving picture schedule for the week March 31 to April 5 is, as follows:

Monday, Gatun; Tuesday, Cristobal; Wednesday, Gorgona; Thursday, Empire; Friday, Corozal; Saturday, Culebra; Friday, Porto Bello.

COROZAL.

Culebra took three games from the local team in the Isthmian Bowling League on Saturday, March 22, with the following scores:

Culebra.	Corozal.
Case..... 89 80 83	King..... 80 80 88
Steele..... 81 88	Beall..... 88 87 80
Brown..... 102	Roberts..... 77 79 86
Silver..... 82 93 90	Webb..... 86 84 94
Palmer..... 94 76 85	Dalton..... 80 96 87
Kiernan..... 79 89 99	

Totals.... 425 426 459 411 426 435

During the stay of the Tenth Infantry at Corozal, the moving pictures will be shown twice on the regular entertainment night, once for the soldiers, and again for the civilians.

CULEBRA.

High scores for the week in duckpins are, as follows: Case, 101; Steele, 103, 100; Warner, 102; Palmer, 107, 101.

The Gatun team will bowl at Culebra on Saturday night, March 29.

EMPIRE.

Thirteen men have been eliminated from the March handicap pool tournament having lost three games. The following is the standing of the first five men now in the tournament.

	Played.	Won.	Lost.
Donnelly.....	9	9	0
Swab.....	8	6	2
Eason.....	5	4	1
Cecil.....	5	4	1
Earle.....	4	2	2

The following games were bowled on the Empire alleys on Saturday, March 22: Empire and Cristobal in the Isthmian League, and Empire and Corozal in the "American" League. The Empire teams won two out of three in each league, as follows:

Isthmian.	American.
Empire..... 445 432 456	Empire..... 446 392 465
Cristobal .. 402 441 436	Corozal..... 440 412 388

A local tenpin bowling tournament has been started, 30 men having entered. They are divided into six teams of five men each. Tournament games will be bowled Monday, Wednesday and Friday evenings.

GORGONA.

The gymnasium classes will meet on Tuesday and Thursday as usual. The men interested in health recreation, and power are urged to join the class.

Gorgona took three straight games from Gatun on Saturday evening on the local alleys. Scores:

Gatun.	Gorgona.
Wurster..... 93 91 74	Sims..... 87 99 92
Green..... 81 82 77	Denst..... 106 74 78
Wells..... 101 73	Dunlap..... 88 83 102
DeMoll..... 77	King..... 100 114 114
Claherty..... 85 78 85	Davis..... 86 89 117
DePoorter..... 82 100	

Totals.... 437 406 336 467 459 503

The following are the scores over 100 during the week: Denst, 107, 102, 107, 115, 115; Arnold, 105; Regan, 103; Seebt, 123, 104; King, 103, 107; Davis, 109, 103; Moyer, 116; Dunlap, 106; Nelson, 109.

A handicap bowling tournament was held at the clubhouse on Good Friday, when ten men bowled for medals. A medal was given for high three games, as follows: King, first, three games, 294; Davis, second, three games, 279; high score, King, 107.

CRISTOBAL.

The Cristobal "Cardinals" defeated the Gatun "Outlaws" two games out of three in duckpins on Saturday evening, March 22. The number of spectators was unusually large.

A local wrestling tournament was held in the Gatun clubhouse on Tuesday night, March 25, with the following entries from which the contestants for an Isthmian tournament to be held in Gatun on April 16 were selected: Chas. E. Duer, Fred Huber, P. L. Martinoff, L. C. Wright, Henry Heine, Geo. Duer, Harry Koch, Harry Meyers, E. Childers, Lee Mitchell, Chas. Ragan,

J. A. Morrissey, J. W. Wilson, F. Jendres. Earl Parsons acted as referee.

At a committee meeting held in Gorgona last Saturday, it was decided to have the Isthmian wrestling tournament at Gatun instead of at Gorgona as originally planned, and the date was set for April 16. There will be two classes of contestants—"novice" and "open," the former for those who have not won matches, and the latter for all comers. Each match will be limited to nine minutes. An entrance fee will be charged and medals awarded winners. The referee has not yet been selected.

Saturday night the Gorgona chorus gave an entertainment assisted by the Tenth Regiment Orchestra. The solos, duets, and choruses were well received. The attendance was 170.

The moving picture date for Cristobal will be Thursday, March 27. The "smoker" will be given on Friday night. All members are requested to bring their friends.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending March 22:

Ancon, March 16, from New York, with 160,775 bags cement, for Atlantic and Fifth Divisions; 9 reels electric cable, First Division; 150 pieces castings, 386 packages brake beams, Mechanical Division; 8 pieces castings, Sixth Division; 24 bundles steel bars, 270 kegs white zinc, 11,000 pieces steel bars, 20 cases tool steel, 31 cases picks, 40 bundles claw bars, 35 pieces steel plates, for stock.

Sixola, March 16, from New York, with 25 reels electrical cable, 8 cases electrical material, 23 cases gate machinery, for First Division; 441 pieces structural steel, 1,429 pieces lumber, for Second Division; 342 bundles steel bars, Fifth Division; 58 packages steel doors, Panama Railroad Company; 20 kegs wire nails, 315 coils wire, 84 cases candles, 770 sacks oats, six barrels lime, 1C cases hardware, for stock.

Leelanaw, March 16, from San Francisco, with six cases hardware, for stock.

Pleiades, March 17, from San Francisco, with two crates rubber hose, for stock.

Carlago, March 17, from New Orleans, with 3,489 pieces yellow pine lumber, for Mechanical Division; 150 sacks tie plugs, 3,695 pieces cross-ties, 1,289 pieces yellow pine lumber, for stock.

Allianca, March 19, from New York, with 145 barrels sand, Mechanical Division; 34 bundles boiler tubes, 9 crates roofing material, for Atlantic Division; 56 cases gate machinery, First Division; 26 reels wire, 300 drums paint, 25 crates handles, 14 cases meters. 50 cases lanterns, 16 barrels glass jugs, 9 cases milk cans, 46 cases valves, 12 coils rope, 191 pieces wrought iron pipe, 50 bundles brooms, 12 cases rubber hose, 1,200 pieces steel bars, 992 bundles tie plates, for stock; and a miscellaneous cargo, the whole consisting of 3,398 packages, weighing 310 tons.

Almirante, March 20 from New York, with 94 packages pipe and fittings, for emergency dams; six pieces castings, Mechanical Division; 27 cases castings, First Division.

Abangares, March 20, from New Orleans, with 350 pieces white oak lumber, 218 pieces yellow pine lumber, for Mechanical Division; 2,764 pieces cross-ties, 16 pieces piling, 5,126 pieces yellow pine lumber, 10 crates handles, 10 pieces castings, 300 cases scouring bar, for stock.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending April 5, 1913. (75 meridian time.):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
March 30.....	3.36	9.52	4.10	10.14	
March 31.....	4.30	11.18	5.31	11.46	
		P.M.			
April 1.....	6.03	12.40	6.48		
April 2.....	1.07	7.10	1.40	7.45	
April 3.....	2.02	8.00	2.22	8.28	
April 4.....	2.45	8.40	2.56	9.03	
April 5.....	3.17	9.16	3.25	9.38	

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday, and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

Lost—On March 16, between the I. C. C. hotel at East Balboa, and Balboa docks, one bill fold, initialed "E. C. M." on inside, containing five ten dollar bills, one ticket on the National Theatre, Panama, Box "J," and one photograph of an elderly gentleman. Finder please communicate with Ancon police station.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning March 26, 1913:

FRESH MEATS.		Price.
Mutton—Stewing, per pound.....	6	
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9	
Entire, forequarter (not trimmed, 10 pounds and over), per pound.....	8	
Leg (8 to 10 pounds), per pound.....	17	
Cutlets, per pound.....	18	
Short cut chops, per pound.....	20	
Lamb—Stewing, per pound.....	6	
Entire forequarter, neck trimmed off, per pound.....	9	
Leg (5 to 8 pounds), per pound.....	20	
Chops, per pound.....	24	
Cutlets, per pound.....	24	
Veal—Stewing, per pound.....	10	
Shoulder, for roasting (not under 4 pounds), per pound.....	12½	
Chops, shoulder, per pound.....	16	
Chops, per pound.....	24	
Loins for roasting, per pound.....	24	
Cutlets, per pound.....	28	
Pork—Loins chops or roast, per pound.....	16	
Beef—Suet, per pound.....	2	
Soup, per pound.....	5	
Stew, per pound.....	8	
Plate, per pound.....	9	
Corned, No. 1, per pound.....	14	
Corned, No. 2, per pound.....	12	
Chuck roast (3 pounds and over), per pound.....	12	
Rib roast, second cut (not under 3½ pounds), per pound.....	16	
Rib roast, first cut (not under 3 pounds) per pound.....	18	
Sirloin roast, per pound.....	19	
Rump roast, per pound.....	19	
Porterhouse roast, per pound.....	20	
Steak, chuck, per pound.....	12½	
Round, per pound.....	13	
Rib, per pound.....	18	
Sirloin, per pound.....	19	
Rump, per pound.....	19	
Porterhouse (not less than 1½ pounds), per pound.....	20	
Tenderloin (Western), per pound.....	30	
Venison (Imported), Stew, per pound.....	6	
Forequarter, (not under 6½ pounds), per pound.....	9	
Rack (not under 5½ pounds) per pound.....	20	
Saddle (not under 7½ lbs.), per pound.....	20	
Leg (not under 9 pounds), per pound.....	20	
Chops, per pound.....	24	
Cutlets, per pound.....	24	
MISCELLANEOUS.		
Livers—Beef, per pound.....	11	
Calif, each.....	60	
Half, each.....	30	
Steak, Hamburger, pkg.....	13	
Sausage—Bologna, per pound.....	13	
Frankfurter, per pound.....	13	
Lieberwurst, per pound.....	19	
Devonshire Farm, per pound.....	19	
Sweetbreads—Beef, per pound.....	140	
Eggs, fresh, dozen.....	28	
one-half dozen only.....	14	
Bluefish, per pound.....	15	
Halibut, fresh, per pound.....	15	
Oysters, quarts, per keg.....	40	
POULTRY AND GAME.		
Chickens—Fancy roasting, milk fed, large, each.....	1.40	
Fancy roasting, milk fed, med., each.....	1.10	
Fancy roasting, corn fed, about 5½ pounds each.....	1.25	
Fancy roasting, corn fed, about 4½ pounds each.....	1.00	
Fowls, each.....	1.00	
Ducks, (Western, about 4½ pounds), each.....	1.00	
Broilers, milk fed, each.....	70	
Broilers, corn fed, each.....	60	
Turkeys, per pound.....	26	
Squabs, each.....	150	
Rabbits, skinned, each.....	30	
Ducks, blackhead, pair.....	60	
teal, pair.....	50	
Partridges, pair.....	1.30	
Grouse, per pair.....	1.30	
Pheasants, per pair.....	1.30	
CURED AND PICKLED MEATS.		
Ham—Sugar cured, per pound.....	20	
Sliced, per pound.....	22	
Half, for boiling, per pound.....	21	
Boiled, per pound.....	28	
Hocks, per pound.....	18	
Beef, salt, family, per pound.....	12	
Bacon—Breakfast, whole piece, per pound.....	25	
Sliced, per pound.....	26	
Ham, Lunch, per pound.....	32	
Pork, salt, family, per pound.....	14	
Ox tongues, each.....	1.00	

Pigs' feet, per pound.....	9
Tongues, per pound.....	18
DAIRY PRODUCTS.	
Butter—Creamery, special, per pound.....	*40
Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Parmesan, per pound.....	35
Gouda, per pound.....	34
Snappy, cake.....	10
Milk (Certified), per bottle.....	**20
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	125
1-gallon.....	150
VEGETABLES AND FRUITS.	
Beets, per pound.....	3
Celery, per head.....	11
Cabbage, per pound.....	3
Cucumbers, per pound.....	18
Carrots, per pound.....	3
Lettuce.....	12
Onions, per pound.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	2
Parsnips, per pound.....	3½
Parsley, bunch.....	3
Squash, per pound.....	14
Turnips, per pound.....	3
Tomatoes.....	*8
Apples, per pound.....	5
Grape fruit, each.....	4
Lemons, dozen.....	24
Limes, per 100.....	80
Oranges, Jamaica, per dozen.....	12

*Indicates reductions from last list.
**Indicates 4 cents allowed for return of bottle.
†Indicates advances on last list.
‡Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock supply next lightest weight is supplied and refund note sent for difference.
§Sold only from Commissaries; no orders take for delivery.

Rainfall from March 1 to 22, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	.43	4	.43
Balboa.....	0		0
*Miraflores.....	0		0
Pedro Miguel.....	0		0
Rio Grande.....	.28	5	.30
<i>Central Section—</i>			
Culebra.....	.56	5	.57
*Camacho.....	0		0
Empire.....	.20	5	.22
Gamboa.....	.02	21	.03
*Juan Mina.....	0		0
Alhajuela.....	.01	5	.01
*El Vigia.....	.02	5-18	.04
*Gorgona.....	.03	6	.03
*Frijoles.....	.01	22	.01
*Monte Lirio.....	.40	22	.60
<i>Atlantic Section—</i>			
Gatun.....	.18	22	.57
*Brazos Brook.....	.12	9	.37
Colon.....	.11	8	.45
Porto Bello.....	.45	3	1.80

*Standard rain gage—readings at 5 p. m. daily.
Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., March 21.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, March 22, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela.	Gamboa.	Gatun Lake.
Sun., March 16.....	125.6	91.6	48.3	48.3
Mon., March 17.....	125.6	91.6	48.3	48.3
Tues., March 18.....	125.6	91.6	48.3	48.3
Wed., March 19.....	125.6	91.5	48.4	48.3
Thurs., March 20.....	125.6	91.5	48.4	48.4
Fri., March 21.....	125.6	91.5	48.4	48.4
Sat., March 22.....	125.6	91.5	48.5	48.4
Height of low water to nearest foot.....	125.0	91.0	44.0	

WANTED.—Stenographer for the Joint Land Commission. Requirements, stenographer-typewriter, familiar with spoken Spanish. Salary \$150, United States currency, per month. I. C. C. employee preferred. Apply to the secretary of the Joint Land Commission, National Palace, Panama, Saturday, March 29, at 8 a. m.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Advance.....	P. R. R.	Tuesday.....	Mar. 25
Panama.....	P. R. R.	Monday.....	Mar. 31
Allianca.....	P. R. R.	Saturday.....	Apr. 5
Colon.....	P. R. R.	Saturday.....	Apr. 12
Advance.....	P. R. R.	Saturday.....	Apr. 19
Panama.....	P. R. R.	Friday.....	Apr. 25
Allianca.....	P. R. R.	Thursday.....	May 1
Colon.....	P. R. R.	Wednesday.....	May 7
Advance.....	P. R. R.	Tuesday.....	May 13
Panama.....	P. R. R.	Tuesday.....	May 20
Allianca.....	P. R. R.	Monday.....	May 26

CRISTOBAL TO NEW YORK.

Colon.....	P. R. R.	Sunday.....	Mar. 30
Advance.....	P. R. R.	Monday.....	Apr. 7
Panama.....	P. R. R.	Saturday.....	Apr. 12
Allianca.....	P. R. R.	Friday.....	Apr. 18
Colon.....	P. R. R.	Thursday.....	Apr. 24
Advance.....	P. R. R.	Thursday.....	May 1
Panama.....	P. R. R.	Wednesday.....	May 7
Allianca.....	P. R. R.	Tuesday.....	May 13
Colon.....	P. R. R.	Monday.....	May 19
Advance.....	P. R. R.	Monday.....	May 26

NEW YORK TO COLON.

Santa Marta.....	U. F. C.	Wednesday.....	Mar. 19
Karl Schurz.....	H.-A.	Saturday.....	Mar. 22
Pastores.....	U. F. C.	Saturday.....	Mar. 22
Metapan.....	U. F. C.	Wednesday.....	Mar. 26
Clyde.....	R. M.	Saturday.....	Mar. 29
Tivives.....	U. F. C.	Saturday.....	Mar. 29
Prinz August Wilhelm.....	H.-A.	Saturday.....	Mar. 29
Zacapa.....	U. F. C.	Wednesday.....	April 2
Sixola.....	U. F. C.	Saturday.....	April 5
Emil L. Boas.....	H.-A.	Saturday.....	April 5
Almirante.....	U. F. C.	Wednesday.....	April 9
Thames.....	R. M.	Saturday.....	April 12

COLON TO NEW YORK.

Almirante.....	U. F. C.	Thursday.....	Mar. 27
Prinz Eitel Friedrich.....	H.-A.	Monday.....	Mar. 31
Carrillo.....	U. F. C.	Tuesday.....	April 1
Thames.....	R. M.	Tuesday.....	April 1
Santa Marta.....	U. F. C.	Thursday.....	April 3
*Pastores.....	U. F. C.	Tuesday.....	April 8
Karl Schurz.....	H.-A.	Wednesday.....	April 9
Metapan.....	U. F. C.	Thursday.....	April 10

*Entirely sold out.

NEW ORLEANS TO COLON.

Atenas.....	U. F. C.	Saturday.....	Mar. 22
Parismina.....	U. F. C.	Wednesday.....	Mar. 26
Turrialba.....	U. F. C.	Saturday.....	Mar. 29
Cartago.....	U. F. C.	Wednesday.....	April 2
Abangarez.....	U. F. C.	Saturday.....	April 5
Heredia.....	U. F. C.	Wednesday.....	April 9
Atenas.....	U. F. C.	Thursday.....	April 12

COLON TO NEW ORLEANS.

Abangarez.....	U. F. C.	Thursday.....	Mar. 27
Heredia.....	U. F. C.	Saturday.....	Mar. 29
Atenas.....	U. F. C.	Thursday.....	April 3
Parismina.....	U. F. C.	Saturday.....	April 5
Turrialba.....	U. F. C.	Thursday.....	April 10
Cartago.....	U. F. C.	Saturday.....	April 12

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

Hamburg-American steamers for New York via Kingston and Santiago de Cuba, sail thus: The *Karl Schurz* and the *Emil L. Boas* on alternate Wednesdays at 10 a. m., and the *Prinz Joachim* and the *Prinz August Wilhelm* on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays, at 3 p. m., ships for New York via Kingston, on Tuesdays, at 10 a. m. and Thursdays at 10 a. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct, Tuesdays at 3 p. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending March 22:

Arrivals—March 16, *City of Para*, from San Francisco; March 16, *Leelanaw*, from San Francisco; March 17, *Pleiades*, from San Francisco; March 17, *Manavi*, from Guayaquil; March 17, *Chile*, from Valparaiso; March 18, *Huallaga*, from Mollendo; March 18, *Trinculo*, from Port Harford; March 18, *Peru* (P. S. N.), from Guayaquil; March 22, *Peru* (P. M.), from San Francisco.

Departures—March 17, *Ucayali*, to Valparaiso; March 18, *Huasco*, to Valparaiso; March 20, *Ecuador*, to Guayaquil; March 20, *Astec*, to San Francisco; March 20, *Trinculo*, to Port Harford.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, APRIL 2, 1913.

No. 32.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Extension of Colon Reclamation.

The fill made in the swamp east of Colon, for the extension of the city from E to G streets, between the lines of Second and Ninth streets, has settled below the grade of the streets. Additional dumping to the extent of about 17,500 cubic yards will be made by the Panama railroad to bring the area to grade. G. street, the present western boundary of the swamp, is to be macadamized between Second and Ninth streets.

The area of reclamation between E and G streets is being extended to the south as far as Twelfth street by hydraulic filling from the pipe-line suction dredge excavating in the slips at the new Cristobal terminals. This area contains about 30 acres, and will probably be used as sites for factories. The present improvements on E street stop at 14th street. It is proposed to extend the macadam to 16th street, near the junction with the Mount Hope road, a distance of about 600 feet. The lots which this extension will make accessible are natural ground, a part of the original Manzanillo Island, and several feet above sealevel.

Work in Culebra Cut.

The work in Culebra Cut has advanced to the point where there is only about 8,000 lineal feet of distance left, exclusive of the drainage channel, in which the excavation has not reached grade in some part. This section is confined to that part of the Cut between Cucaracha slide, and the northern limit of the slide on the east bank, opposite Culebra village. Between Gold Hill and Contractor's Hill, a part of the drainage cut is down to grade, and visitors are now able to get a fairly clear conception of the final depth of the summit cutting.

On Saturday, March 29, there were 32 steamshovels working in the Canal prism in the Culebra Cut section; 13 of these were working on slide material, and the remainder in removing material at the bottom. This number is exclusive of the steamshovels

engaged in terracing the banks, and in miscellaneous operations. At the present rate of progress, it is estimated that about 5,500,000 cubic yards of material may be removed by October 1, the date at which operations by steamshovels will probably be suspended. This leaves between 2,000,000 and 3,000,000 cubic yards, based upon the recently revised estimate, that will have to be taken out by dredges if the water is let into the Canal on October 1. The amount to be removed in this manner will probably be increased by slides at different points along the banks between now and the end of the year.

Work on the Cucaracha slide is progressing favorably, and the output from it has been increasing day by day for the past month, or more, the record output being made on March 29, when five steamshovels removed 11,343 cubic yards of material. This is the largest amount of excavation from a single slide in one day since the beginning of operations by the United States on the Canal. The rock shoulder that formerly stood out prominently from this slide for two or three years before it renewed its activity, and which appeared to offer a stay to the mass of material behind it, joined the new movement, and has now moved into the Canal for a distance of about 80 feet.

Bombs Dug from Cristobal Harbor.

A number of 8-inch spherical bombs, and grape shot have been dug up by the 18-inch pipe-line suction dredge No. 4 excavating near the inner end of the slip, west of the new Pier 17 at Cristobal. About a dozen of the larger projectiles, and a peck of the smaller balls, were found in the stone box of the dredge on the night of March 20 and the morning of March 22, and it is estimated that a greater quantity went through the discharge pipe into the reclamation fill east of E street, Colon. A hand axe of a type used 50 years ago was also caught in the stone box. The dredge was excavating at about 18 feet below the surface of the sea.

The projectiles were encrusted with a kind of natural concrete, made up of coral deposits, sand, and shells, to a thickness of two inches. Below this was a coating of rust, beneath which the steel was clean and well preserved. The mark "ORD. D. 1862" was found in the interior of some of the larger projectiles. One which was opened contained black powder in a state of fair preservation.

Removal of Gamboa Engine House.

The Gamboa engine house and repair shop will be dismantled and reerected on the Gold Hill dump, east of the Canal, adjacent to the Panama railroad, where it will be more convenient of access to Central Division locomotives engaged in hauling material excavated in terracing back from the edge of the Cut. All arrangements will be of a temporary

character, as it is expected that the engine house will not be required more than ten months longer. At the old site, water used in hostling engines was pumped directly from the Chagres River; at the new site, it may be piped from Camacho reservoir. Power and lighting will be supplied by means of a cable line strung across the Cut. The ash pit at Gamboa would only accommodate one engine at a time, which limited the capacity of Gamboa to about one-half of the capacity of the yard and engine house. The new pit will have a capacity of five locomotives. Air will be obtained from the main on the east side of the Canal. Provision will also be made for repairing cars at the new site, including a car shed and necessary tracks.

Sunday Trips of Sightseeing Train for Employees.

The operation of the sightseeing train on Sundays, when 50, or more, employees have indicated their desire to make use of it, has been authorized. A flat rate of \$1.50 will be charged each employee. This train will start from Colon at 8 a. m., run over the three divisions and end the trip at Panama, making it necessary for passengers to return to their homes on the regular trains. Arrangements may be made direct with Mr. J. A. Smith, Superintendent, Panama Railroad Company, and must be completed in time, so that the Atlantic, Central, and Pacific Divisions can be notified not later than Friday afternoon preceding the Sunday on which the trip is made.

Apparatus for Testing Strength of Materials.

The results of nearly six months' use of the Riehle testing machine installed at Gorgona shops, for determining the strength of materials by tensile, compressive, transverse, and shearing tests, have been satisfactory with respect to the uses of such a machine, and to the quality of the castings made at the shops.

The apparatus is a 100,000-pound, United States standard, vertical, screw-power testing machine, furnished with a complete autographic attachment to record the strain diagrams automatically. Seven speeds are obtainable for the moving part of the testing frame proper, varying from 1/20 of an inch to eight inches per minute, for quick adjustment. Power is supplied by a 220-volt direct current motor, so connected and geared that the machine can be started, stopped, changed in speed, or reversed, conveniently and without danger to any of the mechanism.

The testing machine is used in investigating the strength of such materials as wire rope, leather, hose, boiler plate, steel castings, copper alloys, babbitt metals, coke, brick, wood, porcelain, and so forth. Such tests were formerly made with improvised apparatus, and specimens of cast steel and brass were occasionally sent to the testing bureau of the Watertown Arsenal, or to the Bureau of Standards at

NOTES OF PROGRESS.

(Continued.)

Washington. The machine is of especial value in connection with the steel and brass foundries. Specimens from each blow are turned to a standard section and length, screwed into blocks attached to the arms of the machine, and tested for tensile strength and elongation. This obviates the chemical analyses formerly made for each blow. They are now made only as a monthly check, or to determine the composition of such metals as do not meet the physical requirements. The machine is used

occasionally to test materials which have been shipped from the United States without the requisite tests, on account of urgent need.

Progress on Panama Station.

The walls of the new station of the Panama railroad in Panama have been erected to full height, and the roof over the main part of the building is almost completed. The tile columns along the front of the station have been stuccoed, and the balustrade surmounting them is being finished. The *porte cochere* at each end is erected, and, at the first-class, or south end, the connecting vestibule is almost finished. Passing through each coach

entrance will be a road, leading to the cabstand at the alighting platform, but the completion of this road will be delayed by construction work in the rear of the station. The entrance gates for first and second-class passengers have been moved from the immediate rear of the present station to the iron fence along the alighting platform.

The interiors of the waiting rooms are being plastered over the terra cotta tile of which the walls are built, and the ornamental ceiling of the first-class waiting room is almost completed. On the outside, only the columns and the roofs of the coach entrances have been plastered. The entire exterior is to be finished in stucco. It is expected that the building will be ready for use by July 1, 1913.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending March 29:

DATE.	Hours worked.	Cubic yards.
March 24.....	9.50	3,384
March 25.....	9.00	2,329
March 26.....	8.55	3,294
March 27.....	10.05	2,674
March 28.....	7.05	2,307
March 29.....	10.00	2,765
Total.....	54.55	16,753

New Pole Line Between Colon and Gatun.

A new telegraph and telephone pole line will be built between Colon and Gatun to carry a lead-covered cable, with a capacity of 30 pairs of wires, which will not only take care of the present open wires between the points mentioned, but will provide for 14 additional circuits. The change was made necessary partly on account of the automatic signal wires, and partly, because the clearance, between Mount Hope and Mindi, for the proposed transmission line would not be sufficient with the present pole route.

Radio Service.

The Naval radio station at Colon has been connected by wire direct to the Panama Railroad Company's telegraph offices, and radio messages to be dispatched to sea may be filed at any of the railroad offices open to commercial business. Tariffs may be obtained on application at local offices. Additional information concerning the radio service may be obtained from any officer in charge of the radio station at Camp Elliott, Bas Obispo.

CONCRETE WORK IN THE LOCKS AND SPILLWAYS.

Over 99 per cent of the total of 4,446,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on March 29, the amount in place being 4,404,268 cubic yards.

GATUN LOCKS AND SPILLWAY.

About 98 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on March 29, being 2,001,219 cubic yards, out of a total of 2,043,730. In the spillway of Gatun Dam there had been placed 222,792 cubic yards out of a total of 225,000 cubic yards. A statement of the amount placed each working day of the week ending March 29, and of the total, follows:

DATE.	CONSTRUCTION PLANT 2-cubic yard mixers.				Large stone.	Total.	SPILLWAY.			
	Concrete placed.	Hours worked.	No. of mixer.	Concrete laid			Hours worked	No mixers used.		
	Cu. Yds.									
March 24.....	1,464	24.40	4	Cu. Yds.	Cu. Yds.	Cu. Yds.	136	7.50	1	
March 25.....	1,328	22.12	4		1,328		82	5.00	2	
March 26.....	1,368	22.80	4		1,368		110	6.00	1	
March 27.....	1,366	22.76	4		1,366		172	7.00	1	
March 28.....	1,216	20.27	4		1,216		100	6.06	2	
March 29.....	1,056	17.60	4		1,056		196	7.50	1	
Total.....	7,798	129.95	4		7,798		796	39.00	1.33	
Previously reported.....					1,993,421		221,996			
Grand total.....					2,001,219		222,792			

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 918,120 cubic yards, having been placed at the close of work on March 29. The record for each working day of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixer.	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.
March 24.....				199	18.00	2	10		209
March 25.....				200	18.50	2	9		209
March 26.....				173	15.00	2	4		177
March 27.....				180	16.00	2	18		198
March 28.....				215	17.50	2	12		227
March 29.....				207	17.00	2	10		217
Total				1,174	102.00	2	63		1,237
Previously reported.....								4,493	916,883
Grand total.....								4,493	918,120

MIRAFLORES LOCKS AND SPILLWAY.

Over 99 per cent of the concrete for the system of two twin locks at Miraflores was in place on March 29, the total amount on that date being 1,484,929 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT 2-cubic yard mixers.			AUXILIARY PLANT. ½-cubic yard mixers.			Mixed by hand.	Large stone.	Total.	SPILLWAY. AUXILIARY PLANT.						Total.
										1-cubic yard mixers.			½-cubic yard mixers.			
	Concrete placed.	Hours worked.	No. of mixers.	Concrete placed.	Hours worked.	No. of mixers.				Concrete placed.	Hours worked.	No. of mixers.	Concrete placed.	Hours worked.	No. of mixers.	
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.			Cu. Yds.			Cu. Yds.
March 24.....	290	25.33	6	81	9.00	2			371	265	13.00	2				793
March 25.....	460	22.67	8	140	19.00	2			600	232	11.00	2				570
March 26.....	350	17.33	6	122	15.00	2			472	250	8.00	1				518
March 27.....	182	15.67	6	72	8.00	1			254	268	12.00	2				640
March 28.....	158	19.00	6	99	10.00	1	3		260	244	9.50	2				704
March 29.....	232	14.47	6	95	10.00	1	9		336	247	7.50	1				701
Total	1,672	114.47	6.33	609	71.00	1.5	12		2,293	1,506	61.00	1.66				*3,926
Previously reported								3,693	1,482,636							15,361
Grand total								3,693	1,484,929							19,287

*Includes 2,420 cubic yards laid by the Miraflores Locks construction plant—2 cubic-yard mixers; time included under locks.

SOCIAL LIFE OF THE ZONE.

Women's Clubs—Miscellaneous Notes.

The meeting of the Executive Board of the Canal Zone Federation of Women's Clubs will be held at the Hotel Washington, Colon, on Saturday, April 19. This will be the final meeting of the board and all business incidental to the closing of the federation will be transacted at this time.

Recent visitors to the Isthmus among club women of the United States have been Mrs. Emma Fox, official parliamentarian of the Daughters of the American Revolution, whose book on parliamentary usage is the authority used in the meetings of the General Federation, and Mrs. William Holden of the Twentieth Century Club, Detroit, former president of the Detroit Federation of Women's Clubs.

At the general meeting of the Cristobal Woman's Club on Wednesday, April 2, a paper on Jamaica was read by Mrs. Tracy Robinson. This is the last month of the club year and meetings scheduled are, as follows: April 9, home department, subject, gardening; April 16, art and literature department, subject, Stevenson's verse and song; April 23, annual meeting in the Commission clubhouse, at 3 p. m.

The home department of the Gatun Woman's Club met at the home of Mrs. J. H. Stevenson on Thursday afternoon, March 27. The program included discussion of current events. Refreshments were served. Meetings for this month will be held on the 11th and 18th.

The Empire Woman's Club held a social meeting at the home of Mrs. M. E. Smith on Thursday afternoon, March 27, in honor of Miss Jessie Smith, who is leaving on April 12 for a visit to her home in England. Miss Smith has been treasurer of the club for two years. She was presented with a gift of table linens as a memento of her work here.

Changes in the personnel, and removals of members from the Isthmus, were the causes which led to the decision to dissolve the Grand International Auxiliary to the Brotherhood of Locomotive Engineers at the meeting held at Las Cascadas on Friday afternoon, March 28. There were 18 present. The charter has been sent to the headquarters in the United States. The treasury contained about \$100, and this sum was divided between the Highland Park Home for Disabled Railroad Men at Chicago, and an orphanage in the same city. The auxiliary was organized on March 18, 1909.

The Washington Cotillion Club, organized to hold dances at the Hotel Washington on

the first and third Saturdays of every month, will hold its first dance on Saturday night, April 5, 1913.

Church Notes.

During the recent visit to the churches of the Episcopal mission in the Canal Zone, the Bishop of Cuba made ten visitations confirming 419 persons. The largest class for confirmation was at St. Stephen's, New Gatun, when over 100 candidates were presented.

An informal reception was held in honor of Bishop Knight at the Empire clubhouse, on Friday evening, March 28, at the close of the special service at St. Mary's Church, which was conducted by the bishop. The reception was under the auspices of the St. Mary's Woman's Altar Guild.

Easter gifts in the Canal Zone churches this year were unusually large, especially those of the women's societies and guilds. The Altar Guild of Christ Church, Colon Beach, gave an altar of artificial stone, and a credence table, which were used for the first time on Easter Day. The gifts were consecrated by Bishop Knight on the Sunday following. The gifts to St. Luke's Hospital Chapel were, as follows: From the Altar Guild, a new carpet, cushions for the altar rail; and from private contributors to the clergy, a set of candle shields, and a litany book. The Altar Society of St. Ferdinand's Church, Empire, gave a benediction cope and veil, altar linens, and surplices for the servers.

Orphan Asylum at Colon.

The Sisters of Charity in Colon are erecting a building in the new district of the city for the purpose of establishing an orphan asylum. The building, which is a frame structure, will contain dormitories for the accommodation of about 50 children, a schoolroom, rooms for the sisters, kitchen and laundry, and a chapel. In addition to the building lot and garden surrounding it, the Panama Railroad Company has given an extension of land which will be used as a playground. The work of establishing the asylum has been undertaken by the nine Sisters of Charity who conduct the Roman Catholic school in rented quarters at Cash and Seventh streets. The Sisters of this order came to the Isthmus as nurses in Colon Hospital in the time of the French canal. Upon the establishment of the new hospital system under the United States Government, they were retired from the service and opened their school which they have conducted since then. The orphan asylum will be open to children of any creed and nationality. For the poor it will be free, and those who can pay will be charged a small sum for board, the proceeds to be devoted to the maintenance of the institution. It is

expected that the building will be ready for occupancy about April 14. This is the first orphan asylum to be established in the city of Colon. The school, which has an enrollment of 200, will be removed to the new building.

PERSONAL.

Major General Alexander Mackenzie, U. S. A., retired, accompanied by Mr. and Mrs. W. A. Thompson of La Crosse, Wis., their niece, Miss Blanche Thompson; and Judge and Mrs. Charles C. Van Kirk of Greenwich, N. Y., arrived on the *Colon* on Monday, March 24, on a visit of inspection to the Canal. The party returned to the United States on the *Colon*, on Sunday, March 30.

Obituary.

Mrs. Walter S. Browning of Baltimore, Md., died while on the way to Ancon Hospital, on March 24. She was married, and had been on the Isthmus six years. She is survived by her husband, living at Las Cascadas.

John S. Wilcox, an employe of the Atlantic Division, residing at Cristobal, died at the Ancon insane asylum on Monday, March 24, aged 60 years. He had been on the Isthmus 20 years. He is survived by his wife, living at Plainfield, N. J., and a son, Claude I. Wilcox, living at Rodeo, Cal.

Immigration at Port of Colon During March.

According to the figures of the quarantine service, the number of persons who landed at the port of Colon from foreign ports during the month of March was 4,974, consisting of 1,713 cabin, and 3,261 steerage passengers. The number of persons who embarked for foreign ports during the same period was 3,324, consisting of 2,005 cabin, and 1,319 steerage passengers. The number of persons who landed over those who embarked was 1,650. Two thousand seven hundred and twenty-four of the persons arriving in steerage were from Jamaica and the West Indies; 177 were from Costa Rica, 183 from Colombia, 83 from Europe, and 33 from the United States.

The passengers arriving "in transit," consisting principally of tourists, numbered 5,827, as compared with 6,238 in February, and 4,044 in January. Of the 108 vessels arriving at Colon and Cristobal in March, seven were exclusively for tourists, but a much larger number of tourists arrived on the regular steamers. Three private yachts also arrived during the month, the *Clementina*, the *Noma*, and the *Vergemere*.

During the past six years the number of ships arriving at the port of Colon shows an increase of about 100 per cent.

CLASSIFIED EXPENDITURES—ISTHMIAN CANAL COMMISSION.

A statement of classified expenditures of the Isthmian Canal Commission to January 31, 1913, follows:

PERIODS.	Department of Civil Administration.	Department of Law.	Department of Sanitation.	Department of Construction and Engineering.	General Items.	Fortifications.	Total.
Total to June 30, 1909.....	3,427,090.29		9,673,539.28	69,622,561.42	78,022,606.10		160,745,797.09
Total—Fiscal Year, 1910.....	709,351.37		1,803,040.95	26,300,167.05	2,863,088.83		31,675,648.20
Total—Fiscal Year, 1911.....	755,079.44		1,717,792.62	27,477,776.19	3,697,959.72		33,048,607.97
Total—Fiscal Year, 1912.....	820,398.57	24,729.16	1,620,391.12	28,897,738.10	2,819,926.53	1,212,881.66	35,396,065.14
July, 1912.....	63,913.12	1,448.53	123,803.64	2,649,246.61	200,970.55	104,126.92	3,143,509.37
August, 1912.....	62,182.51	1,468.26	123,154.48	2,539,680.83	*98,054.61	111,402.55	2,739,834.02
September, 1912.....	59,201.01	1,207.82	120,385.70	2,285,979.89	77,003.53	127,168.25	2,670,946.20
October, 1912.....	64,383.37	2,033.75	137,574.61	2,473,280.76	83,523.30	129,736.37	2,890,532.16
November, 1912.....	62,200.12	1,892.14	119,031.66	2,420,085.77	75,779.01	300,016.33	2,979,005.03
December, 1912.....	58,987.96	1,462.18	115,819.26	2,871,977.03	120,946.61	118,152.57	3,287,345.61
January, 1913.....	57,699.58	1,469.59	114,562.04	2,825,872.06	6,463.72	119,272.77	3,125,339.76
Grand total.....	6,140,487.34	35,711.43	15,669,095.36	170,364,365.71	87,270,213.29	2,222,757.42	281,702,630.55

*Denotes credit.

BRIDGE OVER FRENCH CANAL.

Plans Approved for Connecting Cristobal Yards with new Coaling Plant.

The plan for a permanent railroad connection from the Cristobal yards to a point in the vicinity of the proposed coaling plant on the island on the west side of the French canal, opposite dock No. 11, has been approved. This connection will be established by means of a bridge, with a span of the vertical lift, or bascule type, to permit the passage of vessels using the canal. Estimates were prepared by the chief engineer of the Panama railroad for two possible connections, one known as the upper, and the other, as the lower crossing. The adoption of the upper crossing was recommended, because it will provide for future development along the present drydock and shops, and can, if necessary, be connected with the main line at a point south of the Mount Hope station. This crossing will also make available a considerable area of water front on both sides of the French canal. The estimate of cost for the upper crossing was lower, as the adoption of the other would require the sinking of steel cylinders in some cases to the depth of 100 feet.

In establishing connection with the island, approximately 6,856 lineal feet of track will be laid, involving the use of 97,200 cubic yards of material to bring it to grade, and the building of about 1,900 feet of temporary trestle. The bridge over the French canal will be about 320 feet in length between the east and west abutment piers, and will be constructed of girders taken from the Barbaecos bridge, with the exception of the vertical lift span 110 feet long. A total of about 364,000 pounds of structural steel and parts will be used in the construction of this span, exclusive of the weight of the operating machinery. The machinery for the lift will be electrically operated.

The bridge superstructure will be supported by six piers; the east abutment pier will be of concrete built on creosoted piles; the center pier for the east approach span will consist of three 4-foot cylinders driven to rock; the east and west channel piers, on which the ends of the vertical span will rest, will be built of six 6-foot, and eight 6-foot steel cylinders, respectively; the center pier for the west approach span will be of three 4-foot steel cylinders, and the west abutment pier will be of concrete resting on solid rock, for which, some excavation, both wet and dry, will have to be done. All steel cylinders will be filled with reinforced concrete. The work on the project will be begun at once.

Railway Mail Clerk Examination.

Examination will be held probably the first Sunday in May for appointment to the position of railway mail clerk in the United States. Applicants should request from this office a copy of Form 1407, which contains all the information published in regard to this examination. Applications should be secured from and filed with this office. Applications will not be received after April 11; this date may be changed if necessary.

In this examination rigid requirements obtain in regard to age, height, and weight; and applicants should have medical certificates in applications executed by the district physician at Culebra, or at Ancon or Colon hospitals.

This examination is given in two grades or

degrees of difficulty of the subjects thereof, dependent upon the residence of the applicants as shown in answer to question 4 of the application. Such residence must therefore be shown in a State or Territory of the United States, and county thereof, up to the time of filing application.

The examination will probably be held in the Commission clubhouse at Empire, but the place and date of examination should be omitted in applications

ISTHMIAN CIVIL SERVICE BOARD.

Culebra, C. Z., March 29, 1913.

Work on West Bank at Culebra.

In order to continue the work of terracing the west bank of the Cut at Culebra village, the wagon road paralleling the Canal at this point, which establishes connection between the village and the labor camps at Enterprise and Rio Grande, and with the settlement at Rio Grande, will be moved further back. Nine buildings, which face the road, will also have to be taken down. Steamshovel No. 207, which has been working on the upper level, will be set at work on a berm lower down until such time as the buildings have been removed and the road relocated, when it will resume its former position.

The "Advance" in a Storm.

The Panama railroad steamship *Advance*, which was due to arrive at Cristobal on Tuesday, April 1, will not dock until Thursday, April 3. The vessel encountered a storm between the southern point of Florida and Cape Maysi, Cuba, which compelled it to proceed under reduced speed. A wireless report received states that the storm did some damage, principally to the ship's forecastle deck. The steamer *Cristobal*, which was proceeding in the same direction and at no great distance away, was ordered to stand by and render assistance if needed. The *Cristobal* is also due on Thursday.

Joint Land Commission.

The Joint Land Commission held its first public hearing on Monday, March 31, in its rooms in the National Palace, Panama. Sessions for the hearing of claims will be held from 8.30 a. m., to 12.30 p. m., on Mondays, Tuesdays, and Wednesdays of each week, the remainder of the week being devoted to executive sessions and visits of inspection.

Operations of French Scrap Contractor.

The first large shipment of the French scrap collected by the Chicago House Wrecking Company on the Isthmus, under contract with the Isthmian Canal Commission, is to be made to the United States in the steamship *Fairmead*, now taking on a cargo at Dock 14, Mount Hope. The vessel will be loaded with about 3,000 tons. About 40,000 tons remain in the yard in the rear of the wharf, and a quantity which cannot be estimated accurately is yet to be collected by the contractor; included in it are twelve abandoned ladder and suction dredges.

A fire was discovered about 7.12 p. m., on Wednesday, March 26, in the cattle pen in the native village at Empire. It is believed to have originated by sparks from a passing locomotive. The damage is about \$200.

David M. Sasso has been appointed consul for The Netherlands in the Republic of Panama.

BOAT LANDING AT GATUN.

Three Hundred Foot Wharf for Tugs, Launches and Smaller Craft Plying Gatun Lake.

The concrete wharf under construction by forces of the Panama railroad about two hundred yards east of the east wing wall for the approach to Gatun Locks from Gatun Lake, will be a landing place for tugs and other small craft. The entire wharf will be 298 feet long, and 30 feet wide. For a distance of 170 feet four inches from the east end, it will have its floor at elevation 92 feet above the normal level of the lake. Tugs and steam launches will receive and discharge cargo and supplies here. The remainder of the wharf, next to the locks, will be only a foot above the maximum level of the lake, with the floor at elevation plus 88 feet. This part will be used by cayucos, rowboats, and small motor boats.

Concrete stairs will connect the upper and lower portions. At each end of the wharf will be a floating landing, made of steel barge planked over and connected with the stationary structure by a wooden ramp, 16 feet long and the width of the wharf. This will insure easy landing, whether the lake be above or below the normal level. The water will be about 16 feet deep alongside.

No cargo-handling apparatus is to be installed. A railroad track with the top of the rails at elevation plus 88.31 feet, will run alongside the rear of the wharf, the center line of the track six feet from the inner face of the retaining wall.

The upper part of the two-level wharf is designed to support a live load of 500 pounds, to the square foot, the lower part a load of 250 pounds. The supporting piers are concrete columns of square sections, two feet on the side, reinforced with four vertical 70-pound steel rails. They will be spaced on 13-foot centers, transversely; longitudinally, they will be an average of 21 feet apart beneath the tug landing, and 31 feet apart beneath the part for smaller boats.

The floor of the lower and upper portions of the dock will be 10 and 12 inches thick, respectively, and will rest on stringers of 36-inch plate bridge girders, reclaimed from bridges on the abandoned old main line of the railroad. Crosswise support will be on reinforced concrete struts linking the pillars, and each having a reinforcement of eight 1½-inch twisted steel rods.

The columns rest on rock, but the 2-foot retaining wall along the rear of the wharf is built on a base, four feet wide and two feet high, resting on piles. The piles are spanned by 70-pound rails, resting on their tops; and vertical reinforcement consists of upright rails, bound with horizontal twisted steel rods.

Examinations by Board of Local Inspectors.

Examinations for pilots, masters, mates, engineers, chauffeurs, and navigators of motor boats, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on Wednesday, April 9, 1913, beginning promptly at 8 a. m. All applicants for licenses must procure from the Executive Office, Ancon, forms of application and information respecting the filling out of same, not later than the day previous to the examination. In addition, all persons desiring chauffeurs' licenses must provide themselves with automobiles with which to demonstrate their ability to operate same.

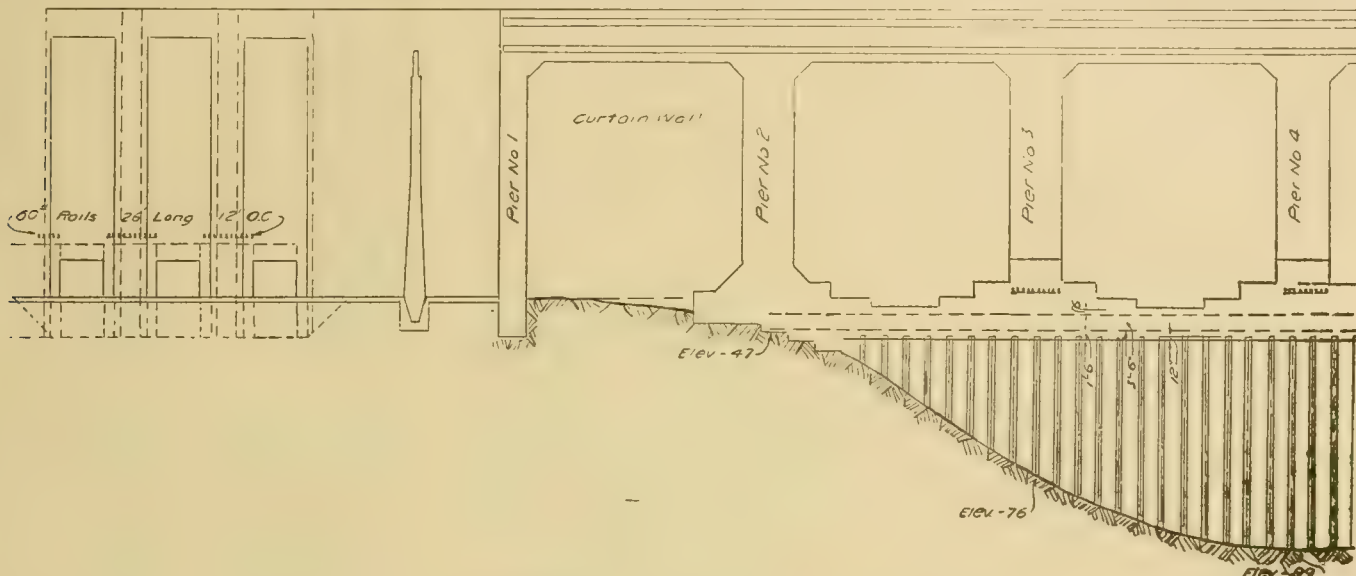
LOWER APPROACH AT GATUN.

Special Form of Center Guide Wall Necessitated by Salt Water and Deep Foundation.

The lower approach wall of Gatun Locks, at the Atlantic end, differs from the five other approach walls in the Canal lock construction. The cellular form of reinforced concrete used for the upper approach walls

construction, with consequent economy, as well as to afford better bracing for the forms in the erection of the piers, the stepped arch was adopted. The lower part of each riser is on the circumference of a regular segment, with 42-foot radius, so the strength of the arch is not diminished. Reinforcement in the base consists of twenty continuous longitudinal rows of 70-pound rail, resting on the

A transverse section of the wall is shown in Sketch B. Each pier, as shown, consists essentially of two piers, connected by a semicircular arch. The horizontal normal section of each component is 18 by 10 feet; the inner sides are vertical for a height of 22 feet five and 11-32 inches, this point above the base being the springing line of the arch, which has a radius of 11 feet. On the outer faces the piers



SKETCH A—SIDE ELEVATION OF LOWER APPROACH WALL AT GATUN LOCKS.

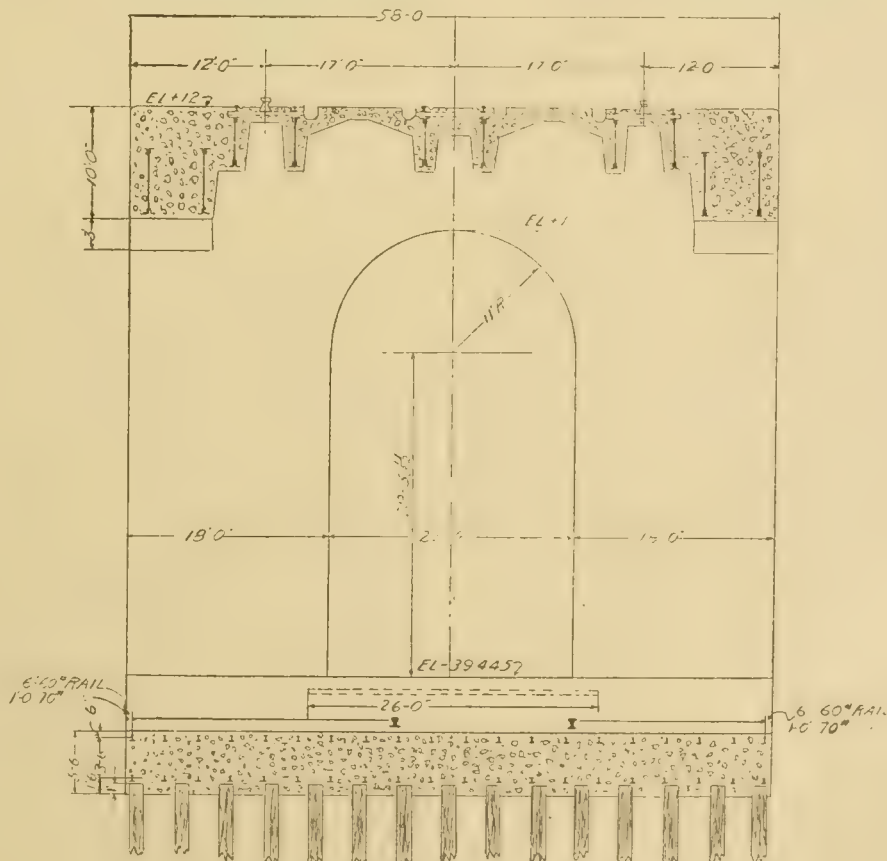
at Gatun, Pedro Miguel, and Miraflores Locks could not be used in sea water, because of its possible effect on the steel reinforcement. The heavy U-section, double gravity-wall, used for the lower center guide walls at Pedro Miguel and Miraflores, and founded directly on rock, would be too heavy for the relatively insecure base in the lower approach to Gatun Locks, where, after excavation has been carried to a maximum of 50 feet below sealevel, the use of long piles is necessary to reach rock, which in places is over 100 feet below sealevel.

The structure planned to meet these conditions comprises a series of piers, connected by flat spans above, to form a causeway of successive flat-span bridges. The original plans contemplated that the piers should rest on broad bases surmounting the piles, but would not be connected at bottom. Excavation revealed, however, softness in the earth overlying the rock which was not shown by the borings made at the time of determining the lock site. It became necessary to bind the piers together and protect them against transverse sliding. Accordingly, the piles, which are driven on four-foot centers, longitudinally and transversely, and on 3-foot centers for the outermost two hundred feet, are surmounted by a continuous base of concrete, which extends a foot below the top of the piles.

This base is 58 feet wide. The bottom is level, but the top is a series of inverted stepped arches, described on a radius of 42 feet. The haunches between the successive inverted arches form the bases of the piers of the flat-span bridge. At the lowest step of the inverted arches, the thickness of the base is five feet seven inches; at the springing line it is 10 feet seven inches. Several of the arches were constructed with the soffit on a curve, but for the sake of speed in

tops of piles; and duplicate rows of similar rail four feet six inches higher up. The side elevation of the base, and of a portion of the

are vertical from base at elevation—39.37 feet, to the top, which is 12 feet above sealevel. The shaded sections shown in Sketch



SKETCH B—SECTIONAL VIEW OF DUAL PIER.
(Twenty of these piers, 50 feet apart, support the causeway.)

completed wall, is shown in the accompanying sketch marked A.

B are not parts of the pier proper, but of the spans connecting the piers in the causeway.

The piers, 20 in number, are set 50 feet apart, center to center. The spans connecting them are carried by four 6-foot, and six 4-foot 6-inch plate girders, encased in concrete. The tops of the spans will be left uneven, in preparation for the grouting necessary to the laying of track for the towing locomotives.

The six spans of wall nearest the locks are closed by 2-foot curtain walls. This is to prevent water from surging from one approach channel to the other, between the piers, when a lock is discharging. Beyond the sixth pier the spans will be open, and the bottom of the spans will be two feet above the water. The wall will extend 1,016 feet from the line of the fender chains, and will contain approximately 45,000 cubic yards of concrete.

JOINT LAND COMMISSION.

Amendments to Rules.

At the session of Tuesday, April 1, the Joint Land Commission announced the following amendments to the rules of procedure:

Rule XIV. The following clause to be added to Rule XIV:

"A copy of such answer shall be served upon the claimant or upon his attorney in fact or agent."

Rule XV. The following clause to be added to Rule XV:

"In all cases, however, twenty minutes will be allotted to counsel for the claimant for final summing up. This limit of time may be extended by the Commission."

Additional Rule, to be marked No. XXI.

"XXI. Subpoenas, at the request of counsel for the United States, or of any claimant or his representative, shall be issued by the secretary of the Joint Land Commission, which said subpoenas may be served by the police of either government."

It is the intention of the Commission to give notice to claimants or their attorneys of the time set for inspection of properties. It does not seem necessary to the Commission, however, to burden the rules with minute details of procedure.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon during the week ending March 29:

Carrillo, March 23, from New York, with seven cases electrical material, 24 cases electric fans, eight reels electric cable, for Mechanical Division; 26 reels insulated wire, 113 cases electrical material, 24 reels electric cable for First Division; 57 pieces steel angles, 12 pieces steel channels, 100 cases toilet paper, 250 cases linseed oil, 10 cases hardware, for stock.

Colon, March 24, from New York, with 12 barrels pipe-fittings, seven cases mining machinery, 81 pieces steel plates, 17 crates cant hooks, 10 cases iron netting, 12 bales rubber hose, 14 bundles tank gauges, 66 kegs rivets, 10 cases paint, 250 kegs bolts, 3,002 bundles steel bars, nine cases writing paper, for stock; 60 cases brake shoes, 98 coils copper wire, 25 cases tools, 54 cases incandescent lamps, 20 kegs dioxide, for Mechanical Division; 168 cases drugs and sundries, for Sanitary Department; and a miscellaneous cargo, the whole consisting of 4,330 packages, weighing 410 tons.

Heredia, March 24, from New Orleans, with 265 packages castings, 856 pieces lumber, for Mechanical Division; 531 pieces cross-ties, seven crates oars, 5,846 pieces lumber, for stock.

Prinz Eitel Friedrich, March 25, from New York, 16 barrels silica wash, 40 casks ingot copper, for Mechanical Division; 51 packages channel buoys, for Light House Division.

Fairmead, March 25, from Mobile, with 525 tons pig iron for Mechanical Division; 29,000 pieces cross-ties, for stock.

Santa Maria, March 27, from New York, with 183 cases soap, 31 barrels rosin, 67 cases galvanized pails, 10 cases paper, 12 cases sundries, for stock; 159 bundles steel bars, for fortifications; 11 reels cable, 11 cases electrical material, 14 cases castings, for First Division; 412 packages structural steel, for Second Division.

Atenas, March 28, from New Orleans, with 529 pieces lumber, for Mechanical Division; 1,310 pieces cross-ties, 480 sacks dairy feed, six pieces piling, for stock.

OFFICIAL CIRCULARS.

Transfers to Mechanical Division.

CULEBRA, C. Z., March 29, 1913.

CIRCULAR No. 349-B:

1. Effective May 1, 1913, the car department of the Panama Railroad Company, including the car shop, paint shop, planing mill, dry house, and blacksmith shop, and the inspection of cars in the Cristobal and Colon yards will be transferred to the Mechanical Division of the Commission.

2. On and after May 1, 1913, the Mechanical Division will inspect and repair and will perform all other work in connection with the maintenance of all cars belonging to the Panama Railroad Company as the General Superintendent may require.

3. Effective April 28, 1913, the car shop at Empire will be transferred from the Quartermaster's Department to the Mechanical Division.

4. After May 1, 1913, repairs to all classes of cars, except Lidgerwood and steel dump cars, will be made in the Cristobal shops, and repairs to Lidgerwood and steel dump cars will be made in the Empire shops. Repairs to steel flat cars and ballast cars, and emergency repairs to any class of cars, will be made at either place as may be most convenient.

5. On May 1, 1913, the foreman, two leading men, four car repairers, three inspectors, and one clerk (all gold employees) and such of the silver force as may be required will be transferred from the Panama Railroad Company to the Mechanical Division of the Commission.

6. Such of the tools, machines, and equipment now in the Cristobal shops as will be required in the performance of the work to be done therein will be lent by the Panama Railroad Company to the Commission, and the Superintendent of the Mechanical Division will give memorandum receipt therefor, as prescribed in paragraph 5 of Circular No. 370-D, dated September 27, 1912.

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Shop Expense Percentage.

CULEBRA, C. Z., March 29, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

In accordance with the provisions of Circular No. 169-E the following shop expense percentage for each shop is hereby fixed, effective April 1, 1913, and will be applied, until further orders, to the distributed labor used in all shop work, in accordance with the provisions of Circular No. 264-A, viz:

Division or shop.	Shop expense percentum.
Mechanical Division.....	50
Dry Dock shop.....	65
Balboa shop.....	25
Porto Bello shop.....	60
Toro Point shop.....	30
Panama railroad shop.....	30

Circular letter from this office dated December 6, 1912, is revoked.

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Reduced Rate Transportation via Royal Mail Steam Packet Company.

CULEBRA, C. Z., March 26, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

I am in receipt of the following communication from the local General Agent of The Royal Mail Steam Packet Company:

"Our head office have written us on the subject of abatements to Isthmian Canal Commission employees, pointing out that they have never authorized us to grant reduction other than between Colon and New York, their understanding being that the reduction was to favor employees when going to and from their homes in the States. They point out that we have been giving the reduction not only to New York, but to Southampton and all other ports served by this Company's steamers, and they instruct us that this should be discontinued. The advice sent you by this office under date of October 13, 1911, must, therefore, meantime be modified to this extent pending reply to letter which we have addressed to our head office. We have, however, told the company that we are taking the liberty to continue to grant the 25 per cent reduction on first-class and second-class passages not only to New York, but to the two intermediate points called at by our steamers, namely, Kingston, Jamaica, and Antilla, Cuba, for the reason that some of the employees may wish to use our steamers only to these ports and then make their way to New York by a different route.

We much regret to be under the necessity of communicating this news to you, but trust later to receive more favorable advices from our head office.

The special repatriation rate for the laborers being returned to Barbados will still hold good."

Hereafter, requests for reduced rate transportation on the above line will be issued only for first and second-class passage between Colon and Kingston, Jamaica; Colon and Antilla, Cuba; and Colon and New York.
GEO. W. GOETHALS, Chairman.

Rainfall from March 1 to 29, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	.43	4	.43
Balboa.....			
Miraflores.....			
Pedro Miguel.....			
Rio Grande.....	.28	5	.30
<i>Central Section—</i>			
Culebra.....	.56	5	.57
*Camacho.....			
Empire.....	.20	5	.22
Gambao.....	.05	28	.08
*Juan Mina.....	.36	25	.36
Alhajuela.....	.05	25	.08
*El Vigia.....	.06	23	.10
*Gorgona.....	.03	6	.03
*Frijoles.....	.25	26	.27
*Monte Lirio.....	.40	22	.60
<i>Atlantic Section—</i>			
Gatun.....	.18	22-27	1.01
*Brazos Brook.....	.12	9	.60
Colon.....	.18	26	.78
Porto Bello.....	.45	3	11.02

*Standard rain gage—readings at 5 p. m. daily.
Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., March 28.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, March 29, 1913. All heights are in feet above mean sealevel.

DAY AND DATE	Vigia.	Alhajuela.	Gambao.	Gatun Lake.
Sun., March 23.....	125.6	91.6	48.5	48.4
Mon., March 24.....	125.6	91.6	48.5	48.4
Tues., March 25.....	125.6	91.6	48.6	48.5
Wed., March 26.....	125.5	91.6	48.6	48.5
Thurs., March 27.....	125.5	91.5	48.6	48.5
Fri., March 28.....	125.5	91.5	48.6	48.5
Sat., March 29.....	125.5	91.5	48.5	48.5
Height of low water to nearest foot.....	125.0	91.0	44.0	

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending April 12, 1913. (75 meridian time.):

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
April 6.....	3.45	9.48	3.53	3.53	10.10
April 7.....	4.13	10.20	4.22	10.41	
April 8.....	4.43	10.52	4.52	11.15	
April 9.....	5.13	11.25	5.23	11.48	
April 10.....	5.47	Noon	5.58		
April 11.....	12.26	6.25	12.39	6.37	
April 12.....	1.06	7.07	1.23	7.22	

Misdirected Letters.

ANCON, C. Z., April 2, 1913.

The following insufficiently addressed letters originating in the United States or its possessions, have been received in the office of the Director of Posts, and, may be secured upon request of the addressees:

Anderson, C. H.	Kerr, Miss Margrete
Anderson, Francis G.	Melvin, Thomas
Behrends, H. J.	Mesinger, Sam
Bennett, E. R.	Mitchell, Thomas
Blake, Mrs. Priscilla	Mosier, N.
Brown, Miss Buster	Naylor, W. H.
Brown, Mr. & Mrs. Jas. R.	Newton, Mr. & Mrs. John
Buttel, Joseph B.	Owyang, E. C.
Charles H. H.	Packer, G. R.
Clarke, Thomas H. S.	Patterson, Miss M.
Clark, William C.	Rainor, Arthur (or Raynor)
Conway, Matt J.	Rogers, Capt. Wm. C.
Dorothy, Herbert	Smith, J. E.
Dowsett, F. R.	Smith, L. B.
Davis, George W.	Stevenson, W. W.
Freeman, Mrs. M. D.	Swain, E. A.
Grinfletcher, Jim.	Taylor, L. M.
Grundler, Edward	Trask, J. E.
Heil, Wm. J.	White, R. J.
Hendry, Oscar	Wilson, Mrs. Ottis
Jones, Wm. A.	Woodworth, James I.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The standing of the teams in the Isthmian Duckpin Bowling League on March 31 was, as follows:

Team.	Won.	Lost.	P. C.
Gorgona.....	9	3	750
Culebra.....	8	4	667
Empire.....	7	5	583
Cristobal.....	6	6	500
Gatun.....	4	8	333
Corozal.....	2	10	167

The standing of the teams in the American Duckpin Bowling League on March 31 was, as follows:

Team.	Won.	Lost.	P. C.
Empire.....	4	2	667
Gatun.....	3	3	500
Cristobal.....	3	3	500
Corozal.....	2	4	333

The moving picture schedule for the week April 7 to 12 is, as follows: Monday, Gorgona; Tuesday, Culebra; Wednesday, Cristobal; Thursday, Corozal; Friday, Gatun and Porto Bello; Saturday, Empire.

The next United States entertainment company will arrive on the Isthmus April 7. This company is known as "Walter Eccles and the Four College Girls." The following schedule has been arranged: April 8, Gatun; April 9, Gorgona; April 10, Empire; April 11, Cristobal; April 12, Porto Bello; April 14, Culebra; April 15, Corozal.

COROZAL.

The Corozal duckpin bowling team lost two out of three games to Empire on the Corozal alleys on Saturday night, March 29.

The Corozal basketball team lost one game to the Tenth Infantry team on Friday night by a score of 21 to 6.

Mr. W. K. Cooper gave a short, but interesting talk on Thursday night.

The Tenth Infantry band concerts which have been given in front of the clubhouse nightly for the last two weeks will be missed by the residents of Corozal. The soldiers struck their tents and returned to Camp Otis on Saturday and Sunday, March 29 and 30.

CULEBRA.

The local team lost two out of three games of duckpins to Gatun in the Isthmian League on Saturday night, March 29, with the following scores:

Gatun.....	508	409	465	Culebra.....	460	479	427
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High scores for the week are, as follows: Kiernan, 102, 100; Palmer, 108, 115; Brown, 104, 102, 100, 106, 100; Steele, 105, 109, 106; Case, 108, 117; Durand, 101, 108; Warner, Jr., 102.

The Cristobal team will bowl at Culebra on Saturday, April 5.

Moving picture dates have been exchanged with Corozal. Pictures will be shown at Culebra Friday night, April 4. Mr. Weston of Cristobal will sing songs illustrated by stereopticon.

EMPIRE.

The standing of the local tenpin tournament, which started during the past week, are, as follows:

Teams and Captains.	Won.	Lost.	P. C.
Giants, C. J. Huson.....	3	0	1.000
Athletics, J. Whaler.....	3	0	1.000
Senators, C. Davis.....	2	1	.666
White Sox, S. Bardelson.....	1	2	.333
Cubs, G. Gustavson.....	0	3	.000
Tigers, L. Giavelli.....	0	3	.000

The high score to date is held by J. Whaler—203—who also holds the high score for three games—497.

On Saturday night, March 29, Empire took three games from Cristobal in the American League series. Scores:

Empire.	Cristobal.
Hill..... 82 79	Buser..... 75 94 92
Grund..... 87 83 94	Farr..... 71 74 78
Mengel..... 78 86	Tuttle..... 76 86 75
Lowande..... 80 96 82	Cotton..... 85 84 87
Huson..... 82 90 85	Vandeburgh 86 88 88
King..... 101 87	

Total..... 409 449 434 393 426 420

The Gorgona boys played the Empire boys at indoor baseball on Saturday afternoon, March 29, and won by a score of 27 to 15.

A game of indoor baseball was played Saturday night between Camp Elliott and Empire, which resulted in a defeat for Empire. Score by innings:

Empire.....	1	0	2	2	1	4	5	4	0—19
Camp Elliott.....	4	2	1	3	0	2	3	4	3—22

The indoor baseball league opens April 19. Candidates for the teams are requested to begin practice now. Two nights each week will be reserved for this purpose.

The glee club held its first meeting on Wednesday night with an attendance of 14. New music has been procured from the United States, and, under the direction of H. W. Dohrman, it is hoped that the club will soon be able to give a concert.

All men who are interested in chess or checkers are

invited to meet on Monday night at 7.30 to aid in forming a chess and checker club.

A new list of books is being made up. Any suggestions will be welcomed.

GORGONA.

Increased interest is being shown in the gymnasium. Every week new men have joined the classes, which are held on Tuesdays, and Thursdays. Twenty-two boys have joined the boys' classes, and all are trying out for the team contest in class work, games, and special sports for boys.

A Spanish class has been organized, with eight members. If there are any more who desire to learn Spanish they are requested to hand their names to the secretary.

The Culebra chess team will meet at Gorgona on Saturday night for a special contest. All lovers of chess are invited to attend.

The discussion club will meet on Thursday evening, and a special debate will be held. Messrs Morrison and Borrows will meet Messrs Wight and Ewing; subject, "Resolved, that restriction of the laws of immigration will be a detriment to the United States."

High scores for the week: King, 112; Seebt, 121, 104; Misal, 107; Norwick, 102; Dunlap, 100, 102, 110; Moyer, 106; Roper, 102.

GATUN.

Gatun defeated Corozal two games out of three in duckpins in the American League series played at Gatun on Saturday evening, March 29. Scores:

Gatun.....	423	426	413	Corozal....	430	403	376
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The first concert of the Walter Eccles and the Four College Girls Company will be held at Gatun on April 8. The seats will be reserved. Ticket are now on sale.

The following pictures are now on sale at the clubhouse: The "smoker," Y. M. C. A. building, anniversary reception, executive council, large group on the front steps, a "States" entertainment, moving picture crowd, pool room, Spanish class, pool team, reading room, barber shop, gymnasium class, and "Singbad" Company.

The Gatun indoor baseball team will play the Marines at Bas Obispo on April 4.

Arthur Pazaggli of New York sang at the motion picture entertainment held on March 28. His songs were "Pagliacci," "The Rosary," "Aida," "For all eternity." Mr. Weston sang four illustrated songs on March 31.

Louis DePoorter, pool room attendant at Gatun made a run of 51 balls at the clubhouse on the evening of March 26, and another run of 54 balls at the Hotel Washington on March 29.

A new class in Spanish for beginners starts on Wednesday evening, April 2.

Those interested are urged to take advantage of this opportunity, inasmuch as it will be several months before another class is formed.

In the local wrestling tournament on Tuesday evening, March 25, the following matches were held:

115-125-pound class—(a) Wright vs. Claybourne, won by Wright; (b) Wright vs. Kerrush, won by Wright.

125-135-pound class—(a) Martinoff vs. J. Wilson, draw; (b) Martinoff vs. J. Wilson, won by Martinoff.

135-145-pound class—(a) J. Duer vs. Huber, won by Duer; (b) J. Duer vs. Huber, won by Huber.

145-158-pound class—Ragan vs. P. G. Flynn, won by Ragan; Ragan vs. L. Mitchell, won by Mitchell; Mitchell vs. Dillon, won by Mitchell.

158-170-pound class—Kock vs. Carlson, won by Kock.

Heavy weight class—Myers vs. Jendros, won by Myers.

Burlesque—Huber vs. Jendros, resulting in a draw.

The general classifications for the library books as made in the new catalogue are, as follows: Nos. 1 to 24, biography; 25 to 49, education; 50 to 74, games; 75 to 99, physiology and hygiene; 135 to 184, travel and adventure; 185 to 234, religion; 235 to 264, poetry; 265 to 443, standard and classic authors; 435 to 449, plays and philosophy; 450 to 549, history and politics; 550 to 1499, fiction; 1500 to 2000, juvenile. The number of books in the library exceeds 1,000. New rules governing loan of books have been drawn up. Library cards can be used only by the member in whose name, and the names of his immediate family, the cards are drawn.

CRISTOBAL.

The results of the duckpin bowling match for the Isthmian League between Gorgona and Cristobal, follows:

Gorgona....	430	452	452	Cristobal...	469	441	449
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A "smoker" was given on Friday night, the program being, as follows: Three selections by the Marine orchestra; solo by Mr. Mosher; solo by Mr. Paul Case; buck and wing dancing by Mr. O'Toole of the Tenth Infantry; address, "The inauguration and personnel of the new Administration," by Mr. Cooper, secretary of the Washington Y. M. C. A.; selection by the orchestra; solos; Messrs. E. L. Mosher and Paul Case; orchestra selection, and serving of coffee; solos by Messrs. Mosher and Case; wrestling, Mr. Fred Huber vs. Messrs. A. Farrell and William Frasher combined, resulting in a draw; wrestling, Mr. A. Quinn of Gorgona vs. Mr. R. Hughes of Cristobal; time, 10 minutes, draw; selection by orchestra.

The regular gymnasium classes will meet on Monday and Thursday nights. Indoor baseball will begin this month, and candidates are urged to report.

NOTARIES PUBLIC.

Following is a list of the notaries public of the Canal Zone, which is published for the benefit of any concerned:

FIRST JUDICIAL CIRCUIT.

Name.	Division.	Location.
Comber, W. G.....	Resident Engineer, Pacific Division.....	Balboa
Hunt, J. St. Clair.....	.....	Balboa
Ninas, Geo. A.....	Executive Office.....	Ancon
Hammer, H. H.....	Pacific Division.....	Corozal
Sinclair, J. M.....	Ancon Hospital.....	Ancon
St. Clair, Dan.....	Pacific Division.....	Balboa
Taylor, Wm. D.....	Posts.....	Pedro Miguel
Williams, Chas. R. *.....	Assistant Prosecuting Attorney.....	Ancon
Barber, Chas. W. *.....	Chief of Police.....	Ancon
Roessner, Wm. E. *.....	Division of Police.....	Ancon
Hamlin, Frank T.....	Pacific Division.....	Corozal

SECOND JUDICIAL CIRCUIT.

Jacobs, Nelson.....	Chairman's Office.....	Culebra
Tragsdorf, Wm. E.....	Chairman's Office.....	Culebra
Warner, A. M.....	Posts.....	Las Cascadas
Bronk, A. Earl.....	Central Division.....	Empire
Swanson, F. G.....	Mechanical Division.....	Gorgona
Stephens, Fred H.....	Quartermaster's.....	Culebra
Donnelly, John W. *.....	Examiner of Accounts Office.....	Empire
Helmer, Joseph H. *.....	Examiner of Accounts Office.....	Empire
Meirowitz, Jacob *.....	Examiner of Accounts Office.....	Empire
McNiel, Jacob R. *.....	Examiner of Accounts Office.....	Empire
Huff, Mercer B. *.....	Examiner of Accounts Office.....	Empire
Chadbourn, Paul H. *.....	Examiner of Accounts Office.....	Empire
Farish, H. S. *.....	Surveying Officer.....	Culebra
Litt, B. M. *.....	Assistant Surveying Officer.....	Culebra

THIRD JUDICIAL CIRCUIT.

Boyd, Oscar S.....	Atlantic Division.....	Cristobal
Conrad, Moise.....	Atlantic.....	Gatun
Jackson, John J.....	Quartermaster's.....	Cristobal
Lucky, John J.....	Atlantic Division.....	Gatun
Wempe, Henry J.....	Fire Protection.....	Cristobal

*Indicates jurisdiction throughout the Zone.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning April 2, 1913:

FRESH MEATS.		Price.
Mutton—Stewing, per pound.....	6	
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9	
Entire, forequarter (not trimmed, 10 pounds and over), per pound.....	8	
Leg (8 to 10 pounds), per pound.....	17	
Cutlets, per pound.....	18	
Short cut chops, per pound.....	20	
Lamb—Stewing, per pound.....	6	
Entire forequarter, neck trimmed off, per pound.....	9	
Leg (5 to 8 pounds), per pound.....	20	
Chops, per pound.....	24	
Cutlets, per pound.....	24	
Veal—Stewing, per pound.....	10	
Shoulder, for roasting (not under 4 pounds), per pound.....	12½	
Chops, shoulder, per pound.....	16	
Chops, per pound.....	24	
Loin for roasting, per pound.....	24	
Cutlet, per pound.....	28	
Pork—Loin chops or roast, per pound.....	16	
Beef—Suet, per pound.....	2	
Soup, per pound.....	5	
Stew, per pound.....	8	
Plate, per pound.....	9	
Corned, No. 1, per pound.....	14	
Corned, No. 2, per pound.....	12	
Chuck roast (3 pounds and over), per pound.....	12	
Rib roast, second cut (not under 3½ pounds), per pound.....	16	
Rib roast, first cut (not under 3 pounds) per pound.....	18	
Sirloin roast, per pound.....	19	
Rump roast, per pound.....	19	
Porterhouse roast, per pound.....	20	
Steak, chuck, per pound.....	12½	
Round, per pound.....	13	
Rib, per pound.....	18	
Sirloin, per pound.....	19	
Rump, per pound.....	19	
Porterhouse (not less than 1½ pounds), per pound.....	20	
Tenderloin (Western), per pound.....	30	
Venison (Imported), Stew, per pound.....	6	
Forequarter, (not under 6½ pounds), per pound.....	9	
Rack (not under 5½ pounds) per pound.....	20	
Saddle (not under 7½ lbs.), per pound.....	20	
Leg (not under 9 pounds), per pound.....	20	
Chops, per pound.....	24	
Cutlets, per pound.....	24	
MISCELLANEOUS.		
Livers—Beef, per pound.....	11	
Calif, each.....	60	
Half, each.....	30	
Steak, Hamburger, pkg.....	13	
Sausage—Bologna, per pound.....	13	
Frankfurter, per pound.....	13	
Lieberwurst, per pound.....	13	
Devonshire Farm, per pound.....	19	
Sweetbreads—Beef, per pound.....	14	
Eggs, fresh, dozen.....	27	
one-half dozen only.....	14	
Bluefish, per pound.....	15	
Halibut, fresh, per pound.....	15	
Oysters, quarts, per keg.....	40	
POULTRY AND GAME.		
Chickens—Fancy roasting, milk fed, large, each.....	1.40	
Fancy roasting, milk fed, med., each.....	1.10	
Fancy roasting, corn fed, about 5½ pounds each.....	1.25	
Fancy roasting, corn fed, about 4½ pounds each.....	1.00	
Fowls, each.....	1.00, 70, 80, 90	
Ducks, (Wester, about 4½ pounds), each.....	1.25	
Broilers, milk fed, each.....	70	
Broilers, corn fed, each.....	60	
Turkeys, per pound.....	26	
Squabs, each.....	15	
Rabbits, skinned, each.....	30	
Ducks, blackhead, pair.....	60	
teal, pair.....	50	
Partridges, pair.....	1.30	
Grouse, per pair.....	1.30	
Pheasants, per pair.....	1.30	
CURED AND PICKLED MEATS.		
Ham—Sugar cured, per pound.....	20	
Sliced, per pound.....	22	
Half, for boiling, per pound.....	21	
Boiled, per pound.....	28	
Hocks, per pound.....	18	
Beef, salt, family, per pound.....	12	
Bacon—Breakfast, whole piece, per pound.....	26	
Sliced, per pound.....	25	
Ham, lunch, per pound.....	32	
Pork, salt, family, per pound.....	14	
Ox tongues, each.....	1.00	

	Price.
Pigs' feet, per pound.....	9
Tongues, per pound.....	18
DAIRY PRODUCTS.	
Butter—Creamery, special, per pound.....	*40
Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Parmesan, per pound.....	35
Gouda, per pound.....	34
Snappy, cake.....	10
Milk (Certified), per bottle.....	**20
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	125
½-gallon.....	150
VEGETABLES AND FRUITS.	
Beets, per pound.....	3
Celery, per head.....	11
Cabbage, per pound.....	3
Cucumbers, per pound.....	118
Carrots, per pound.....	3
Lettuce.....	112
Onions, per pound.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	2
Parsnips, per pound.....	3½
Parsley, bunch.....	3
Squash, per pound.....	14
Turnips, per pound.....	3
Tomatoes.....	*8
Apples, per pound.....	5
Grape fruit, each.....	4
Lemons, dozen.....	24
Limes, per 100.....	80
Oranges, Jamaica, per dozen.....	12

*Indicates reductions from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advances on last list.
††Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock supply next lightest weight is supplied and refund note sent for difference.
‡Sold only from Commissaries; no orders take for delivery.

Tug Service to Porto Bello and Toro Point.

Following is a schedule of Atlantic Division tugs in the service between Dock 13 and Porto Bello, and Dock 13 and Toro Point.

PORTO BELLO.

*Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays—*Leave Dock 13 at 5 p. m., arrive Porto Bello 10 p. m., returning leave Porto Bello 11 p. m., arrive Dock 13 at 3 a. m.

*Saturdays—*Leave Dock 13 at 9 a. m., arrive Porto Bello 11 a. m., returning, leave Porto Bello 2 a. m., arrive pier No. 4, Colon, 4 p. m.

*Every Saturday, except the first Saturday after the 20th of each month. Sailing No. 1—*Leave Dock 13 at 2 p. m., arrive Porto Bello 4 p. m., returning, leave Porto Bello at 4.30 p. m., arrive at pier No. 4, Colon, 6.30 p. m. *Sailing No. 2—*Leave Dock 13 at 6 p. m., arrive Porto Bello 11 p. m., returning, leave Porto Bello 12 midnight, arrive Dock 13 at 4 a. m.

*Every Sunday—*Leave Dock 13, 7 p. m., arrive Porto Bello 9 p. m., leave Porto Bello 9 p. m., arrive Dock 13, 11 p. m.

*Sundays, immediately following the 20th of each month ONLY—*Leave Porto Bello 6 a. m., arrive Dock 13 at 8 a. m.

TORO POINT.

*Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays. Sailing No. 1—*Leave Dock 13 at 6.30 a. m., arrive Toro Point 7 a. m., returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. *Sailing No. 2—*Leave Dock 13 at 5 p. m., arrive Toro Point 5.30 p. m.

*Special, Wednesdays, ONLY—*Leave Dock 13 at 12 noon, arrive Toro Point 12.30 p. m., returning, leave Toro Point 12.30 p. m., arrive Dock 13 at 1 p. m.

*Saturdays. Sailing No. 1—*Leave Dock 13 at 6.30 a. m., arrive Toro Point 7 a. m., returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. *Sailing No. 2—*Leave Dock 13 at 4.30 p. m., arrive Toro Point 5 p. m., returning, leave Toro Point 5.30 a. m., arrive Dock 13 at 6 p. m.

*Sundays. Sailing No. 1—*Leave Dock 13 at 9.30 a. m., arrive Toro Point 10 a. m.; returning, leave Toro Point at 10.30 a. m., arrive Dock 13 at 11 a. m. *Sailing No. 2—*Leave Dock 13 at 4.30 p. m., arrive Toro Point 5 p. m., returning, leave Toro Point 5 p. m., arrive Dock 13 at 5.30 p. m.

Married.

ROHDEN-McKENZIE—At the Union Church, Cristobal, on March 24, Jessie McKenzie of Chattanooga, Tenn., to Mr. N. Rohden of Chicago, Ill., the Rev. Carl H. Elliott officiating.

Lost—A flat gold bracelet in Colon or Cristobal. Finder will be rewarded if same is returned to House 30, Cristobal, C. Z.

Lost—March 27, in Gatun, or on way to Colon Hospital, wallet containing money, I. C. C. hotel book No. 311,353, commissary book No. 63859C, and personal papers, valuable only to owner. Finder will please return books and papers to the owner's care, the McClintic-Marshall Construction Company, Gatun, and keep the money.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Panama.....	P. R. R..Monday.....	Mar. 31
Allianca.....	P. R. R..Saturday.....	Apr. 5
Colon.....	P. R. R..Saturday.....	Apr. 12
Advance.....	P. R. R..Saturday.....	Apr. 19
Panama.....	P. R. R..Friday.....	Apr. 25
Allianca.....	P. R. R..Thursday.....	May 1
Colon.....	P. R. R..Wednesday.....	May 7
Advance.....	P. R. R..Tuesday.....	May 13
Panama.....	P. R. R..Tuesday.....	May 20
Allianca.....	P. R. R..Monday.....	May 26

CRISTOBAL TO NEW YORK.

Advance.....	P. R. R..Monday.....	Apr. 7
Panama.....	P. R. R..Saturday.....	Apr. 12
Allianca.....	P. R. R..Friday.....	Apr. 18
Colon.....	P. R. R..Thursday.....	Apr. 24
Advance.....	P. R. R..Thursday.....	May 1
Panama.....	P. R. R..Wednesday.....	May 7
Allianca.....	P. R. R..Tuesday.....	May 13
Colon.....	P. R. R..Monday.....	May 19
Advance.....	P. R. R..Monday.....	May 26

NEW YORK TO COLON.

Metapan.....	U. F. C..Wednesday.....	Mar. 26
Clyde.....	R. M..Saturday.....	Mar. 29
Tivives.....	U. F. C..Saturday.....	Mar. 29
Prinz August Wilhelm.....	H. A..Saturday.....	Mar. 29
Zacapa.....	U. F. C..Wednesday.....	April 2
Sixaola.....	U. F. C..Saturday.....	April 5
Emil L. Boas.....	H. A..Saturday.....	April 5
Almirante.....	U. F. C..Wednesday.....	April 9
Thames.....	R. M..Saturday.....	April 12
Carrillo.....	U. F. C..Saturday.....	April 12
Prinz Joachim.....	H. A..Saturday.....	April 12
Santa Marta.....	U. F. C..Wednesday.....	April 16
Carl Schurz.....	H. A..Saturday.....	April 19
Pastores.....	U. F. C..Saturday.....	April 19
Metapan.....	U. F. C..Wednesday.....	April 23

COLON TO NEW YORK.

Santa Marta.....	U. F. C..Thursday.....	April 3
Pastores.....	U. F. C..Tuesday.....	April 8
Carl Schurz.....	H. A..Wednesday.....	April 9
Metapan.....	U. F. C..Thursday.....	April 10
Prinz August Wilhelm.....	H. A..Tuesday.....	April 15
Tivives.....	U. F. C..Tuesday.....	April 15
Trent.....	R. M..Tuesday.....	April 15
Zacapa.....	U. F. C..Thursday.....	April 17
Sixaola.....	U. F. C..Tuesday.....	April 22
Emil L. Boas.....	H. A..Wednesday.....	April 23
Almirante.....	U. F. C..Thursday.....	April 24

NEW ORLEANS TO COLON.

Turrialba.....	U. F. C..Saturday.....	Mar. 29
Cartago.....	U. F. C..Wednesday.....	April 2
Abangarez.....	U. F. C..Saturday.....	April 5
Heredia.....	U. F. C..Wednesday.....	April 9
Atenas.....	U. F. C..Saturday.....	April 12
Parismina.....	U. F. C..Wednesday.....	April 16
Turrialba.....	U. F. C..Saturday.....	April 19

COLON TO NEW ORLEANS.

Atenas.....	U. F. C..Thursday.....	April 3
Parismina.....	U. F. C..Saturday.....	April 5
Turrialba.....	U. F. C..Thursday.....	April 10
Cartago.....	U. F. C..Saturday.....	April 12
Abangarez.....	U. F. C..Thursday.....	April 17
Heredia.....	U. F. C..Saturday.....	April 19

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

Hamburg-American steamers for New York via Kingston and Santiago de Cuba, sail thus: The *Carl Schurz* and the *Emil L. Boas* on alternate Wednesdays at 10 a. m., and the *Prinz Joachim* and the *Prinz August Wilhelm* on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays, at 3 p. m. ships for New York via Kingston, on Tuesdays, at 10 a. m. and Thursdays at 10 a. m.; for Bocas del Toro on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct, Tuesdays at 3 p. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending March 29:

Arrivals—March 24, *Pachitea* from Valparaiso; March 26, *Limari*, from Valparaiso.

Departures—March 23, *Hualaga*, to Mollendo; March 24, *Peru* (P. S. N.) to Valparaiso; March 25, *Manavi* to Guayaquil; March 26, *Seward* to San Francisco; March 26, *City of Para* to San Francisco.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, APRIL 9, 1913.

No. 33.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications.

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Organization for Balboa Townsite Work.

The subdivision of municipal work of the Fifth Division, which will be used on the construction work in connection with the new townsite at Balboa, will be increased by the addition of 19 men on the gold roll, and 406 men on the silver roll, a total of 423. The approved organization includes one junior engineer, two transitmen, one general foreman, eight foremen, four carpenters, and three road roller engineers as the gold force; and three clerks, six foremen, three messengers, two storemen, three watchmen, five blacksmiths, 10 waterboys, 44 carpenters, 20 caulkers, six chainmen, one hostler, 50 ten-cent, 50 thirteen-cent, 100 sixteen-cent, and 100 twenty-cent laborers as the silver force.

Awards for Transmission Line Equipment.

Awards have been made for the greater part of the material required in the construction of the Cristobal-Balboa electric transmission line, 48 miles long, which will be the principal feeder of the proposed Isthmian transmission system, connecting a terminal substation at Cristobal with a similar one at Balboa.

The contract for the fabrication and assembly of 627 steel track-span bridges for single track, and for 150 track-span bridges for double track, together with 3,108 anchors, seven feet long, all under circular No. 752, has been made to the United States Steel Products Company, who agree to begin delivery in 150 days and complete it in 305 days. The only other bidder on the above material was the Riter-Conley Company of Pittsburgh. The plan of manufacturing this material at the company's shops and then assembling it on the Isthmus, the Canal Commission furnishing the erecting shed, necessary trackage and transportation facilities, quarters for the company's employees, etc., has been adopted. The successful bidder already has a force on the Isthmus working on other contracts.

Award was also made to the United States

Steel Products Company for supplying 1,500,000 feet of No. 00 copper wire, and 500,000 feet 5/16-inch copper clad wire, in competition with the National Brass and Copper Tube Company, the only other bidder. The contract for furnishing 4,000 insulators, 3-unit, suspension type, with Monel-metal fittings, and 2,500 insulators, 3-unit, strain type, with Monel-metal fittings, was awarded to the Locke Insulator Manufacturing Company of Victor, N. Y., in competition with the General Electric Company, and the National Electric Supply Company.

No award has yet been made for substation equipment. The ground plates required for the work will be manufactured from old copper and cable, now on the Isthmus.

Canal Zone Wind Velocities.

The wind movements on the Canal Zone do not show a very wide range from year to year. The maximum velocity of record since the Americans took charge of the meteorological observations occurred in July, 1909, when, during a storm on the Pacific slope from the southeast, a velocity of 59 miles an hour was attained for a brief interval. There is no record of a storm of cyclone dimensions ever having visited this part of the Isthmus. The nearest approach to a heavy wind storm in the past nine years was that above mentioned, which broke down a number of trees and tore off the galvanized roofs of some dwellings in an area extending from Panama City to Miraflores. At Culebra 10 miles away, the wind did not exceed 36 miles an hour.

The wind movement at Cristobal is greater than at either Culebra or Ancon, and at Culebra, greater than it is at Ancon. The average maximum velocities at all three points each year for three years, from computations made from March 1 to March 1, follows:

CRISTOBAL.		
YEAR.		Max. vel. Miles.
1910-11.....	28½	
1911-12.....	28½	
1912-13.....	31	
CULEBRA.		
1910-11.....	29½	
1911-12.....	29½	
1912-13.....	28½	
ANCON.		
1910-11.....	24½	
1911-12.....	24½	
1912-13.....	25½	

Cristobal and Colon are some times visited by heavy "northers" late in the year and during the trade wind season, but in no time during the past five years has the maximum velocity of the wind at that point been greater than 39 miles an hour, which occurred in November, 1909. In June, 1910, the maximum there did not exceed 19 miles an hour. At Culebra, the maximum wind velocity since April, 1909, was 39 miles an hour, in July, 1910, and the lowest monthly maximum 21 miles an hour, in October, 1912. At Ancon,

the lowest monthly maximum in five years was 18 miles an hour in September, 1908, and again in the same month in 1910.

Order for 1,000-Cubic Yard Barges.

Requisition has been forwarded to Washington for six dump barges with a capacity of 1,000 cubic yards each, to be used in connection with the 15-cubic yard dipper dredges, recently contracted for with the Bucyrus Company of South Milwaukee, Wis. These barges are to be delivered at some Atlantic or Pacific port of the United States for towing to the Isthmus by January 1, 1914. They are to form part of the dredging equipment for use in emergency work in the Culebra Cut section, and will be towed up the Canal to the point required. A description of the dipper dredges appeared in THE CANAL RECORD of February 5, 1913.

The specifications call for barges of 1,000 cubic yards capacity when level full with top of hopper coaming. The largest barges in the Canal service at the present time have a capacity of 500 cubic yards each. The new barges are to be of heavy construction, suitable for rough service, and will be rectangular in design, with a rake at each end. Each barge is to be 160 feet long, with depth, molded, of not more than 13 feet six inches, and is to have a 30-inch freeboard when fully loaded. The top of the hatch coaming is to be not more than two feet above the deck.

The hoppers are not to be more than four in number to each barge, with a minimum width of 12 feet at the bottom and are to be provided with doors opening to their full size at bottom. The sides are to be framed with not less than 6 by 3½ by ¾-inch angles, spaced 24 inches from center to center, made of steel plates weighing 22.95 pounds to the square foot, and lined throughout with 6 by 8-inch yellow pine timbers set on end to prevent injury to the hoppers when loading rock. The hopper doors are to be of wood 10 inches thick, lined with steel plate. They are to be dropped by manual power, and lifted by steam, or other approved method, the mechanism to be located on one side of the hopper.

The hoppers are to be provided with watertight bulkheads extending between them to the deck. The bulkheads forming the ends of the hoppers are to extend entirely across the barge frames to floor deck and side beams, and are to be made of steel plate weighing 12.7 pounds to the square foot. There is also to be a watertight bulkhead at each end of each rake, and in the space forward and aft of the hoppers, there is to be a central longitudinal bulkhead of steel plate weighing 10.2 pounds to the square foot, which will extend from the hoppers to each end of the barge. In addition, there are to be two long lattice trusses, one on each side, midway from the center bulkhead to the side of the hull.

The deck beams are to be of 5 by 3½-inch Z-bars, spaced one on each frame. The hull

NOTES OF PROGRESS.

(Continued.)

plating is to be of the weight of 22.95 pounds to the square foot; bilge to be of the same weight of material and to be carried to the height of 12 inches to the flat surface beyond the round of the bilge. The side plates are to be of a weight of not less than 18 pounds to the square foot. The deck is to be of checkered steel about 7/16 of an inch thick. The hatches are to be 18 inches in diameter, one opening into each compartment of the hull, each hatch

to be fitted with a cast-iron cover. An 18-inch iron ladder is to be provided for each hatch.

Proposed Agricultural Show.

James N. Harris has made application of the Canal Commission for a site in the city of Colon for the holding of an agricultural show, in which the West Indians on the Isthmus are expected to participate. The show is to be held in celebration of the opening of the Canal, and the applicant states that the Governor of Colon has already approved the idea. He has been advised that in all probability a suitable site can be provided.

CONCRETE WORK IN THE LOCKS AND SPILLWAYS.

Over 99 per cent of the total of 4,446,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on April 5, the amount in place being 4,414,839 cubic yards.

GATUN LOCKS AND SPILLWAY.

About 98 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on April 5, being 2,007,641 cubic yards, out of a total of 2,043,730. In the spillway of Gatun Dam there had been placed 223,521 cubic yards out of a total of 225,000 cubic yards. A statement of the amount placed each working day of the week ending April 5, and of the total, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			Large stone.	Total.	SPILLWAY.		
	Concrete placed.	Hours worked.	No. of mixer.			Concrete laid	Hours worked	No mixers used
	Cu. Yds.			Cu. Yds.	Cu. Yds.			
March 31.....	1,424	23 72	4	1,424	129	7.25		2
April 1.....	1,254	20 91	3	1,254	156	7 00		1
April 2.....	852	14 19	3	852	98	5.00		2
April 3.....	840	14.01	3	840	114	7 00		2
April 4.....	962	16.03	3	962	116	6.75		2
April 5.....	1,090	18.17	3	1,090	116	6.00		1
Total.....	6,422	107.03	3.17	6,422	729	39 00		1.66
Previously reported.....				2,001,219	222,792			
Grand total.....				2,007,641	223,521			

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 919,157 cubic yards, having been placed at the close of work on April 5. The record for each working day of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed	Hours worked.	No. of mixer.	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.
March 31.....	193	17.00	2	193	17.00	2	8	.....	201
April 1.....	203	18.00	2	203	18.00	2	6	.....	209
April 2.....	190	17.00	2	190	17.00	2	3	.....	193
April 3.....	125	11.00	2	125	11.00	2	7	.....	132
April 4.....	179	16.50	2	179	16.50	2	6	.....	185
April 5.....	117	20.00	2	117	20.00	2	.....	.....	117
Total.....	1,007	99.50	2	1,007	99.50	2	30	.....	1,037
Previously reported.....	.....	.....	.....	.....	.....	.....	.....	4,493	918,120
Grand total.....	.....	.....	.....	.....	.....	.....	.....	4,493	919,157

MIRAFLORES LOCKS AND SPILLWAY.

Over 99 per cent of the concrete for the system of two twin locks at Miraflores was in place on April 5, the total amount on that date being 1,488,041 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each day worked last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 1-cubic yard mixers.			Mixed by hand.	Large stone.	Total.	SPILLWAY.						Total.	
										CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 1-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers				Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.				Cu. Yds.			Cu. Yds.
March 30				90	9.00	1			90					147	5.00	1	495
March 31	446	18.83	6	81	10.00	1			527	348				160	6.00	1	550
April 1	298	18.17	6	90	10.00	1			388	390				130	5.00	1	320
April 2	252	14.67	6	107	16.00	2			359	190				49	7.00	1	255
April 3	632	20.17	6	89	10.00	1			721	206				54	2.00	1	284
April 4	326	14.67	6	106	12.00	2			432	230							190
April 5	530	17.67	6	65	9.00	2			595	190							
Total	2,484	104.18	6	628	76.00	1.67			3,112	1,554				540	25.00	1	*2,094
Prev'ly reported								3,693	1,484,929								19,287
Grand total								3,693	1,488,041								21,381

EXECUTIVE ORDERS.

Modification in Application of Safety Appliance Acts.

Under authority vested in me by law, it is ordered:

Paragraph 5 of Executive Order No. 1002, dated January 6, 1909, is hereby amended by adding the following paragraph thereto:

The application of the requirements of the Safety Appliance Acts to equipment of rolling stock at navy yards is hereby so far modified that the cars and engines at yards and stations, will be fitted with safety appliances only to such extent as may, in the judgment of the commandant, subject to the approval of the Chief of the Bureau of Yards and Docks, Navy Department, be deemed necessary or advisable.

WOODROW WILSON.

THE WHITE HOUSE,

March 19, 1913.

[No. 1750.]

Suspension of Operation of Order of February 26, 1913, Providing a Method of Compensation for Personal Injuries to, or for the Death of, Employees of the Isthmian Canal Commission and Panama Railroad.

Whereas, an Executive Order was promulgated on February 26, 1913, providing a method of compensation for personal injuries to, or for the death of, employees of the Isthmian Canal Commission and of the Panama Railroad Company, and no appropriation has been made available for the payment of compensation under the terms of such Order:

And Whereas, the provisions for the payment of claims for injuries to, or for the death of, employees of the Isthmian Canal Commission and of the Panama Railroad Company, in force prior to the time of the promulgation of said Order of February 26, 1913, should continue until the Order just mentioned can be made effective;

By virtue of the authority vested in me,

It is ordered, That the operation of the said Order of February 26, 1913, is hereby suspended until further executive order or direction in the premises;

And it is further ordered, That, until such further order or direction, payment of compensation for injuries to, or for the death of, employees of the Isthmian Canal Commission and of the Panama Railroad Company, occurring after February 28, 1913, shall, as before that date, continue to be made in accordance with the Act of Congress, approved May 30, 1908, (35 Stat. 556), being "An

Act granting to certain employes of the United States the right to receive from it compensation for injuries sustained in the course of their employment," the Act of Congress, approved February 24, 1909, (35 Stat. 645), being "An Act relating to injured employes on the Isthmian Canal," Section 5 of the Act of Congress, approved March 4, 1911, being "An Act making appropriations for sundry civil expenses of the government for the fiscal year ending June thirtieth, nineteen hundred and twelve, and for other purposes," the laws of the Canal Zone, and the rules and regulations heretofore made in regard thereto.

WOODROW WILSON.

THE WHITE HOUSE,

March 24, 1913.

[No. 1755.]

Hunting of Birds in Canal Zone.

By virtue of the authority vested in me, I hereby establish the following Executive Order for the Canal Zone:

Section 1. It shall be unlawful for any person to hunt, trap, capture, wilfully disturb or kill any bird of any kind whatever, or to take the eggs of any bird, except in the form and manner permitted by the regulations provided for by this Order.

Section 2. The Isthmian Canal Commission, or the Governor of the Panama Canal after the reorganization is established, is hereby empowered and directed to enact suitable regulations, from time to time, for the protection of birds and their nests, and prescribing the form and manner in which birds may be hunted, and the kinds of birds that may be hunted, and those that shall not be molested.

Section 3. A violation of any of the regulations established under this Order shall be punished by a fine of not more than one hundred (\$100) dollars or by imprisonment for not more than thirty days for each offense.

Section 4. This Order shall take effect thirty days after its publication in THE CANAL RECORD.

WOODROW WILSON.

THE WHITE HOUSE,

March 19, 1913.

[No. 1749.]

To amend an Executive Order approved February 5, 1912, providing an inexpensive method for the administration of the estates of deceased and insane persons in certain cases, etc.

By virtue of the authority vested in me, I hereby establish the following Executive Order for the Canal Zone:

Section 1. That Section 1 of an Executive Order entitled: "Executive Order to provide an inexpensive method for the administration of estates of deceased and insane persons in certain cases, and to repeal Act 24 of the Canal Zone laws and the Executive Orders amendatory thereto," and the first paragraph of Section 8 of said Order, are hereby amended so as to read, as follows:

Section 1. Whenever an employe in the service of the Isthmian Canal Commission, or the Government of the Canal Zone, or of the Panama Railroad Company, shall die, leaving an estate in the said Zone, or whenever such decedent, being a citizen of the United States, leaves an estate in the Canal Zone or in the Republic of Panama; and the said estate consists of personal property only and a regular administration shall not have been instituted in the Courts of the Canal Zone thereon, the Collector of Revenues

for the Canal Zone is hereby authorized and directed to take possession of the estate of the said deceased person and to make a complete inventory thereof and present the same to the Judge of the Circuit Court of the First Judicial Circuit of the Canal Zone, to be filed by the said Judge in the records of his court when approved by him.

Section 8. If an employe of the Isthmian Canal Commission, the Government of the Canal Zone, or the Panama Railroad Company should be adjudged insane by the Canal Zone Courts and the estate consists entirely of personal property and no regular guardianship of such estate shall have been instituted by the Canal Zone Courts, it shall be the duty of the Collector of Revenues to take possession of the estate of such insane person, including any salary or other acknowledged claim due to such employe by the Isthmian Canal Commission, the Canal Zone Government or the Panama Railroad Company, and make a complete inventory thereof and file the same with the Judge of the Circuit Court of the First Judicial Circuit of the Canal Zone, and under the direction and with the approval of the Judge of said court, the Collector of Revenues may pay the lawful indebtedness due by the insane person, as well as the expenses incurred in administering the said estate and he shall hold the residue of the estate subject to the orders of the Circuit Judge.

Section 2. This amendment shall apply to the estates of employes who died or became insane prior to this date as well as to those who die or are adjudged insane hereafter.

Section 3. This Order shall take effect from and after this date.

WOODROW WILSON.

THE WHITE HOUSE,

March 20, 1913.

[No. 1751.]

Relating to Foreign Corporations.

By virtue of the authority vested in me, I hereby establish the following Order for the Canal Zone:

SECTION I.

No corporation or joint stock company (other than insurance companies) organized under the laws of any State or Territory of the United States or of any foreign government shall do business in the Canal Zone until after it has filed in the office of the Collector of Revenues a duly authenticated copy of its charter or articles of incorporation, as well as a statement, verified by the oath of the president or secretary of said corporation and attested by a majority of its board of directors, showing:

1. The name of such corporation and the location of its principal office or place of business outside of the Canal Zone; and if it is to have any place of business or principal office within the Canal Zone, the location thereof.

2. The amount of its capital stock.

3. The amount of its capital stock actually paid in, in money, and the amount of its capital stock paid in, in any other way, and in what way the payment was made.

4. The amount of assets of the corporation and in what the assets consist, and the actual cash value thereof.

5. The liabilities of such corporation, and if any of its indebtedness is secured, how secured, and upon what property.

6. Such other evidence as the Collector

of Revenues may deem necessary to satisfy him of the financial standing or solvency of the corporation or company.

SECTION II.

Such corporation or joint stock company shall file a certificate with the Collector of Revenues, certifying that said corporation or joint stock company has consented to be sued in the Canal Zone upon all causes of action arising against it therein, and designating the Collector of Revenues, and his successors in office, to be its true and lawful attorney, upon whom all process in any such action may be served; and it shall agree that any lawful process against it served on such attorney shall constitute a valid service upon it, and that his authority shall continue in force so long as any liability against it remains outstanding in the Canal Zone.

Such power of attorney, and the vote authorizing its execution, duly certified and authenticated, shall be filed in the office of the Collector of Revenues, and a copy thereof, certified by him, shall be sufficient evidence thereof.

No corporation or joint stock company shall do business in the Canal Zone until such certificate is duly filed and the other provisions of this Order are complied with.

SECTION III.

Upon compliance with the conditions set out in the foregoing section of this Order and the payment of an annual fee, in advance, of \$50, to the Collector of Revenues, he shall issue to such corporation or company a certificate authorizing it to do business within the Canal Zone. Such certificate, however, shall be terminable by the direction of the Chief Executive of the Canal Zone, but if terminated without fault upon the part of the corporation or joint stock company, a proportionate rebate of the license fee will be made to such corporation or company.

SECTION IV.

Any agent or person representing a corporation or joint stock company who does business in the Canal Zone before such corporation or company has complied with the provisions of this Order shall be subject to a fine not exceeding \$25, or imprisonment in jail not exceeding thirty days, and each day's business so done by such agent or person shall be considered a separate offense for the purpose of this Order.

SECTION V.

This Order shall not be held to modify the provisions of an Executive Order relating to insurance companies, dated March 12, 1907, effective July 1, 1907.

SECTION VI.

This Order shall take effect 60 days from the date of its publication in THE CANAL RECORD.

WOODROW WILSON.

THE WHITE HOUSE,

March 20, 1913.

[No. 1752.]

Dedication of Hebrew Synagogue.

The Hebrew congregation (Kaal Kadosh Yangacob), at Colon, will dedicate its new synagogue on Third and F streets, on Sunday, April 13, at 2.30 p. m. All Israelites residing in the Canal Zone are invited to attend the ceremony.

ACTIVITIES OF ZONE WOMEN.

Number of Organizations for Women has Grown from 15 to 25 Since 1907.

The present status of the organizations of women in the Canal Zone, from the number and nature of such organizations, forms a significant study of the development and aim of the woman movement, which was begun in 1907. A short history of this movement was published in *THE CANAL RECORD* of August 2, 1911; the paragraphs that follow show the present strength of each organization.

In 1907, there were not more than 15 organizations of women in the Canal Zone; there were nine general clubs, with one federation, about two fraternal societies, and one or two small church organizations. The present list of such organizations contains 25 names. There are three general clubs, one federation of clubs, one sunshine society, one study club, 12 church societies, four fraternal societies, one camp fire girls organization, one bowling club, and two gymnasium clubs. The total membership of these organizations is 695.

Under the head of general clubs is the Canal Zone Federation of Women's Clubs, with a membership of 58. This number also includes four members at large. The subdivisions of the federation, with their respective memberships are, as follows: The Cristobal Woman's Club, 35; the Gatun Woman's Club, 10; the Empire Woman's Club, 10; the Gatun Sunshine Society has 32 members, the Ancon Study Club has 12 members. The total membership of the women's auxiliaries to the fraternal societies is 286. The largest of these societies is the Isthmian Canal Rebekah Lodge, No. 1, Gorgona, which has a membership of 90; Orchid Chapter, No. 1, Order of the Eastern Star has 87 members; the Pythian Sisters have 70 members, and the Panama Auxiliary, United Spanish War Veterans, No. 1, has 39 members.

The 12 church organizations have a total membership of 239, divided, as follows: In Empire, there is an auxiliary to the Christian League with 34 members, a girls' sunshine society with 18 members, the Fidelity Bible Class with 32 members, St. Mary's Altar Guild with 12 members, and St. Ferdinand's Altar Society with 15 members. In Gatun, there is a missionary study class with eight members, an auxiliary to the Christian League with 11 members, and an Altar Guild, composed of women of the Episcopal Church, with 14 members; In Cristobal, there is the Ladies Aid to the Cristobal Union Church with 27 members, and, on Colon Beach, the Altar Guild of Christ Church with 30 members. In Ancon, the Woman's Foreign Missionary Society to the Methodist Episcopal Church has 20 members and the Altar Guild of St. Luke's Hospital Chapel has 25 members. There are gymnasium classes of girls in Gorgona and Gatun with memberships of 18 and nine, respectively. The camp fire girls' organization in Gatun has six members, and a bowling club of girls in the same village has nine members.

The earliest existing club is the Cristobal Woman's Club, which was organized on September 7, 1909, and the last to be organ-

ized is the Panama Auxiliary, United Spanish War Veterans, which was formed under a charter from Denver on March 12, 1912.

At its meeting on Thursday, April 3, the Ancon Study Club authorized the president, Mrs. H. C. Shick, to make application for admission of the club to the General Federation of Women's Clubs. This application will be placed in the hands of the membership committee at once. The study club has been organized 15 months, and the course of meetings has been broken only by a three weeks' vacation at Christmas time. In addition to maintaining the library, and the purchase of reference books, the club has pledged \$15 to the Canal Zone Federation of Women's Clubs toward the blind boy fund. The library is an important branch of the club work. It contains 173 volumes, and there is a constant circulation of more than one-third of the number. The meetings of the club are held weekly at the home of the librarian, Mrs. Mark White. Application for club membership may be made at any time through a member.

The health department of the Cristobal Woman's Club will hold the second free lecture in the 1913 series in the conversorium, Cash and D streets, Colon, on Thursday evening, April 10. The subject is oral hygiene. Dr. M. E. Connor will be the speaker.

Church Work.

The quarterly meeting of the Isthmian Sunday School Association will be held in the Commission chapel, Gorgona, on Sunday, April 13, at 2.30 p. m. The program includes a paper on teaching in the Sunday school by Mrs. E. M. Keyser of the Methodist Episcopal Church, Panama; an address on the work by Mr. Weaver of the Cristobal Union Church, and a discussion on these two papers led by Mr. Kromer, superintendent of the Cristobal school. Mr. Warner of Culebra will conduct a round table discussion. The musical program is under the charge of Mr. Kramer of Gorgona, with Mrs. Charles O. Purdy of Gatun as soloist.

The meetings of St. Luke's Altar Guild are being held semimonthly in the morning at 9.30 o'clock. The guild has in hand sewing for charity. The second of the morning meetings will be held at the residence of Mrs. Charles F. Mason on Tuesday morning, April 15.

Immigration at Ports of Panama and Ancon.

According to the figures of the quarantine service, the number of persons who landed at the ports of Panama and Ancon during the month of March from foreign ports was 618, consisting of 458 cabin, and 160 steerage passengers. The number of persons who embarked for foreign ports was 682, consisting of 554 cabin, and 128 steerage passengers. The number of persons who embarked over those who landed was 64. The net immigration to the Isthmus during March through the ports of Colon, Cristobal, Panama, and Ancon was 1,586.

Accidents at Miraflores Locks.

Ross S. Wallace, American, in the employ of the McClintic-Marshall Construction Company, Charles F. H. Clarke, Barbadian, and Lionel Downes, Demerarian, in the employ of the same company, were killed at Miraflores Locks on Thursday, April 3, by the fall of a scaffold. The men were engaged

in riveting the lock gates, when one end of the scaffold gave way under the weight of a 7-ton rivet reamer, precipitating them to the floor of the lock, 60 feet below. A Grenadian named Sanford Huggins also fell with the others but was not killed. Another workman saved himself by thrusting a wrench through a hole in the gate leaf and hanging on to it until rescued. Mr. Wallace was a native of Ohio, was 44 years of age, married, and is survived by his wife living at Moline, Ill. He had been on the Isthmus about 11 years.

Harvey Edwards, American, age 31, home address, Charleston, Ill., and Hugh Dever, American, age 24, home address, Philadelphia, both employees of the McClintic-Marshall Construction Company on the lock gates at Miraflores, fell and were killed on Monday, April 7. The men were working on a scaffold, when Edwards stepped on a projecting plate in the gate leaf to further his reach, holding on with one hand to a wrench which he had thrust through a hole in the side of the leaf. The wrench pulled out, and, in falling, he carried Dever to the bottom of the lock with him. Both men were single.

PERSONAL.

Mr. C. F. Wicker, the new secretary of the American Legation in Panama, succeeding Mr. W. W. Andrews, assumed the duties of the post on March 24. He was at one time private secretary to the American Ambassador at Berlin, and, later, was for two years with Mr. Dodge, the present American minister to Panama, in Morocco. He is a graduate of Yale, and studied international law at Oxford University.

Cristobal Dancing Club.

CRISTOBAL, C. Z., April 7, 1913.

The regular dance of the Cristobal Dancing Club will be held on April 12, 1913, at the clubhouse. Invitations or membership cards must be presented at the door.

W. H. MARSH, *Secretary.*

Sailing of the "Cristobal."

The sailing date of the steamship *Cristobal* has been set for Sunday, April 13, at 3 p. m., from pier No. 11, Cristobal.

Sailing of the "Advance."

The steamship *Advance* will sail from pier No. 11, Cristobal, at 3 p. m., Thursday, April 10, instead of April 7, as was listed in the regular sailing list.

A party of 48 engineers from Cuba have been spending a few days on the Isthmus inspecting the Canal work.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, April, 1913. All heights are in feet above mean sealevel.

DAY AND DATE	STATIONS.			
	Vigia.	Altajueln	Gumboa	Gatun Lake.
Sun., March 30.....	125.5	91.4	48.6	48.5
Mon., March 31.....	125.5	91.4	48.6	48.6
Tues., April 1.....	125.6	91.5	48.6	48.6
Wed., April 2.....	125.6	91.7	48.6	48.6
Thurs., April 3.....	125.6	91.7	48.6	48.6
Fri., April 4.....	125.5	91.6	48.6	48.6
Sat., April 5.....	125.5	91.5	48.7	48.6
Height of low water to nearest foot.....	125.0	91.0	44.0	

ANCON CRUSHER.

Rock Furnished from Ancon Quarry is in Excess of Anticipated Demands.

The extent of operations at Ancon quarry and crusher has considerably exceeded that anticipated when the first rock was crushed there on February 8, 1910. At that time the crusher was meant to supply crushed rock for Pedro Miguel and Miraflores Locks, requiring about two million cubic yards. Of this quantity about 55,000 cubic yards has been supplied by the Rio Grande crusher, which closed down at the time the Ancon crusher began operations. Up to April 1, 1913, the output from Ancon crusher was 2,412,951 cubic yards. The two-million mark was passed in August, 1912.

The Porto Bello crusher supplied all the crushed rock for Gatun Locks and Spillway, turning out approximately two million cubic yards of rock between the latter part of 1907 and April 30, 1912, when it closed down. It left enough rock in the stock piles at Gatun for the completion of the Atlantic lock and spillway work, but all other crushed rock used in the Canal and railroad work since has been supplied from Ancon quarry. Future operations there will be determined by the demand for rock in the construction of permanent terminals and buildings, and the requisites for fortifications, roads, track ballast, and commercial sales. The demand from the Pacific locks, which are now taking about 1,400 cubic yards daily, will cease practically within a few months.

When Ancon quarry was begun at 150 feet above sealevel on the west side of Ancon Hill, it was planned to carry the work as high as elevation 375 feet. One of the drills is now within a hundred feet of the top of the hill, which rises 650 feet above sealevel. The face of the excavated bank extends 375 feet above the dumping track at the crusher, or over 400 feet above the track on which the cars receive the crushed rock. The face is cut by three distinct terraces, averaging two hundred feet in width, and discernible in profile far down the bay. The length of the working face of the quarry at the lowest terrace is about 1,400 feet.

The area of operations is extended during each dry season by stripping the side of the hill, above or beyond the working face, of vegetation and surface earth. About 150 extra men are employed through four months for this work. The regular force at quarry and crusher numbers about 175 men, and the average continuous service of these men has been more than two years.

The output of the crusher has frequently exceeded the manufacturer's rated maximum capacity of 3,000 cubic yards a day. The greatest weekly record—25,693 cubic yards—was made during the six days ending March 23, 1912, during which time, however, the crushers were on double shift and these figures are, therefore, not the best records. For those days, the lowest record was 4,145 cubic yards. The highest record for any day has been 3,679 cubic yards, on August 9, 1912, on which day the crushers were operated nine hours. The lowest weekly record has been 6,895 cubic yards, for the week ending October 1, 1910. The main shaft of the crusher broke

on September 26, and the machinery was shut down for several days.

The output during the week ending April 5, 1913, is shown in the following statement:

DATE.	Hours worked.	Cubic yards.
March 31.....	10.05	2,843
April 1.....	6.45	2,761
April 2.....	7.25	2,624
April 3.....	7.50	2,438
April 4.....	7.15	2,062
April 5.....	6.40	2,155
Total.....	46.00	14,883

Sand Barges Converted to Dump Barges.

Two of the three steel sand barges which were towed from Colon to Balboa, through the Strait of Magellan by the tug *Reliance* for use in the Chame sand service, have been converted into hopper barges for handling spoil from the ladder dredges at work in the Pacific entrance. The lessened placements of concrete, with the approach to completion of the locks, has diminished the demand for sand to as little as 1,000 cubic yards a day, and has released some of the sand barges for other use.

The second of the converted barges was launched from the Balboa shipways on April 5. The changes consisted in cutting holes in the bottoms of the four 12-foot compartments, into which the hold of the barge is divided by steel bulkheads, and installing timber drop-doors to control the apertures. The drops are raised and lowered manually, by chains and ratchets, and the compartments may be dumped singly or simultaneously. The alterations have reduced the capacity of each barge from 600 to 525 cubic yards.

Work of Lidgerwood Unloaders in March.

During the month of March, the following Lidgerwood trains and cars were unloaded by the Central Division:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa.....	5*	1,114	23,394
Miraflores.....	2	270	5,670
Gamboa.....	4†	1,149	24,110
Total.....	11	2,533	53,174

*One unloader worked from the 1st to the 25th.

†One unloader worked 23½ days.

Balboa Sand Service.

A report of sand shipped from Balboa during March, follows:

DESTINATION.	Number cars.	Cubic yards.
Fifth Division (C. E.).....	1,124	21,238
Atlantic Division.....	19	463
Central Division.....	43	645
Fortifications.....	*388	8,952
First Division.....	1	15
Civil Administration.....	1	25
Quartermaster's Department.....	3	65
Panama railroad.....	13	325
Sanitary Department.....	1	25
Private.....	7	175
Total.....	1,600	31,928

*Also three barges.

A cable message has been received from Madrid, Spain, by the Minister of Foreign Relations of Panama advising that the embargo, which has been in effect for some time past, prohibiting the emigration of the laborers of that country to other parts, has been lifted, in so far as it applies to Panama.

LOST—In or near Cristobal commissary on April 3, a small mesh purse containing keys and money. Reward if returned to Auditor's office, Panama railroad Colon.

STEAMSHOVEL RECORDS.

Work of Central Division Machines During the Month of March.

During the month of March, the total amount of material excavated in the Central Division was 1,183,900 cubic yards, of which 259,571 cubic yards were classified as earth and 924,329 cubic yards as rock. The total—1,183,900 cubic yards—was primary excavation in the Canal prism, and all of it was removed by steamshovels.

The high record for the month was made by shovel No. 208, working 25 days in the Culebra district, which excavated 51,128 cubic yards of rock.

The second best record for the month was made by shovel No. 207, working 25 days in the Culebra district, which excavated 50,152 cubic yards; 10,802 cubic yards of rock, and 39,350 cubic yards of earth.

The best record for a shovel of the 70-ton class was made by shovel No. 109, working 25 days in the Culebra district, which excavated 42,300 cubic yards of earth.

Shovel No. 208, working in the Culebra district, made a high record for one day by excavating 2,940 cubic yards of rock on March 24.

Shovel No. 224, working on a 12-hour shift in the Culebra district, made a high record of 3,743 cubic yards of earth on March 29.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best record for the month and for one day are shown in the following table:

BEST RECORDS FOR THE MONTH.
CULEBRA DISTRICT.

SHOVEL No.	CUBIC YARDS.			
	Earth.	Rock.	Total.	No. of days at work.
208.....	.....	51,128	51,128	25
207.....	39,350	10,802	50,152	25
224.....	46,180	.....	46,180	*42

EMPIRE DISTRICT.

216.....	.....	39,412	39,412	25
227.....	500	38,203	38,703	25
221.....	1,472	35,478	36,950	24

BEST RECORDS FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
205	Empire.....	Mar. 7	Rock.....	2,778
229	Empire.....	Mar. 8	Rock.....	2,775
227	Empire.....	Mar. 8	Rock.....	2,473
208	Culebra.....	Mar. 24	Rock.....	2,940
208	Culebra.....	Mar. 25	Rock.....	2,800
208	Culebra.....	Mar. 10	Rock.....	2,760
207	Culebra.....	Mar. 3	Rock.....	2,600

*The excess number of days over and above the actual number of working days in the month of March (25) is due to double shift and night work.

Monuments to Balboa.

Gen. Rafael Reyes, a former president of the republic of Colombia, is interested in the project of obtaining the cession of some suitable location in the Canal Zone for the purpose of raising a monument to Vasco Nunez de Balboa, discoverer of the Pacific Ocean. The four hundredth anniversary of this discovery occurs on October 5 (new style) of this year. His idea is that the monument shall be paid for by the governments of the Latin-American republics who may be favorably disposed. A site will probably be granted if the matter is fully determined upon. The municipality of Panama has already made provision for the erection of a monument in honor of Balboa at some point in that city to be determined later.

OFFICIAL CIRCULARS.

Remission of Customs on Parcels Post Packages.

CULEBRA, C. Z., March 29, 1913.

CIRCULAR No. 481:

Employees receiving packages by parcels post in the future will be required to submit request for the remission of customs duties on Form C. E. 403. No parcels post packages will be released by postmasters until the presentation of an approved copy of Form C. E. 403 describing briefly the character of merchandise being imported, or the presentation of a receipt from the Panamanian customs officials showing the payment of the required duties.

A supply of Form C. E. 403 can be secured on requisition from Mount Hope.

GEO. W. GOETHALS, *Chairman.*

Captain of the Port of Ancon.

CULEBRA, C. Z., April 5, 1913.

CIRCULAR No. 410-A:

Effective this date, Mr. Charles H. Mann, receiving and forwarding agent, Balboa agency, is appointed captain of the port of Ancon.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Survey of Equipment.

CULEBRA, C. Z., March 25, 1913.

To ALL ACCOUNTABLE OFFICERS:

In future, in submitting surveys, the following information will be shown:

Boilers—1. Number. 2. Type. 3. Dimensions. 4. Old French or American manufacture. 5. Horsepower. 6. Date entered service. 7. Date discontinued in service. 8. Safe working pressure. 9. Date last inspected. 10. General condition at time of survey.

Engines—1. Type. 2. Dimensions. 3. Horsepower. 4. General condition at time of survey.

Mixers, Concrete—1. Name of maker. 2. Size. 3. Capacity in cubic yards per hour. 4. Horsepower required. 5. Date entered service. 6. Date discontinued in service. 7. General condition at time of survey.

Crushers, Rock—1. Name of maker. 2. Size. 3. Capacity per hour. 4. Date entered service. 5. Date discontinued in service. 6. General condition at time of survey.

Drills, Rock—1. Name of maker. 2. Type. 3. Diameter of cylinder. 4. Length of stroke. 5. Equipped for steam or air. 6. Diameter of hole drilled. 7. Diameter of steel used. 8. Date entered service. 9. Date discontinued in service. 10. General condition at time of survey.

Channellers—1. Name of maker. 2. Size. 3. Type of head. 4. Date entered service. 5. Date discontinued in service. 6. General condition at time of survey.

Locomotives—1. Name of maker. 2. Date built. 3. Type. 4. Gauge. 5. Size of cylinders. 6. Horsepower. 7. Weight. 8. Train length. 9. Maximum width. 10. Maximum height. 11. Wheel base. 12. Diameter of drivers. 13. Number of tubes and dimensions. 14. Date entered service. 15. Date discontinued in service. 16. General condition at time of survey.

Pumps—1. Name of maker. 2. Type. 3. Size. 4. Date entered service. 5. Date discontinued in service. 6. General condition at time of survey.

On shop tools, miscellaneous machinery, etc., it is

desired that in so far as possible a complete description of each article be given, showing type, capacity, general condition, etc.

This information can be shown in a memorandum pasted to the survey, and is necessary for the proper compilation of catalogues for sale.

Please acknowledge receipt of this letter direct to the surveying officer.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Electrical Work—Fifth Division.

COROZAL, C. Z., March 27, 1913.

ORDER:

Mr. H. K. Smith, electrical superintendent of the Fifth Division having resigned, the position is abolished. Effective March 27, Mr. C. W. Lawton, station engineer, is assigned charge of the Miraflores power plant. Mr. H. E. Wilkins, general foreman, is assigned charge of the outside electrical work. Both Mr. Lawton and Mr. Wilkins will report to the resident engineer direct.

H. O. COLE,
Resident Engineer, Fifth Division.

Sunday Trips of Sightseeing Train for Employees.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., APRIL 4, 1913.

CIRCULAR No. 63:

All concerned—Effective at once, when fifty or more employees desire to use the sightseeing train on Sunday, arrangements will be made to operate it over the Atlantic, Pacific, and Central Divisions at a flat rate of \$1.50 per passenger, train to leave Colon passenger station at 8 a. m., going over all three divisions, tying up at Panama. Passengers will have to return to their respective stations on regular trains.

Arrangements may be made with this office and should be completed not later than Friday afternoon preceding Sunday on which trip is to be made, in order that the Atlantic, Central, and Pacific Divisions can be notified of the movement not later than that date.

J. A. SMITH, *General Superintendent.*

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon during the week ending April 5:

Pastores, March 30, from New York, with 175 cases electrical material, 18 reels electrical cable, 18 cases pumping machinery, for First Division; 111 bundles steel bars, for Fifth Division; 33 cases scoops, 13 cases fuse, eight cases tools, 20 cases hardware, for stock.

Carl Schurz, March 30, from New York, with 70 cases bolts, 11 cases paper, five cases blow torches, for stock; 50 packages buoy parts, for Lighthouse Division.

Parissima, March 31, from New Orleans, with 300 pieces white oak lumber, 237 pieces yellow pine lumber, two reels steel cable, for Mechanical Division; 939 bales hay, 2,628 pieces cross-ties, 3,110 pieces yellow pine lumber, for stock.

Metapan, April 3, from New York, with 187 cases electrical material, nine pieces pipe and fittings, for First Division; 99 bundles metal lath, for Fifth Division; eight cases paint, 18 cases brushes, for stock.

J. L. Luckenbach, April 3, from New York, with 104,

914 bags cement, for Atlantic and Fifth Divisions; 120 cases blasting caps, for stock.

Turrialba, April 3, from New Orleans, with 505 pieces lumber, for Mechanical Division; 91 pieces piling, 1,051 pieces cross-ties, 1,451 pieces lumber, 648 drums oil, 1,060 cases oils and greases, 328 bales hay, 557 bales straw, for stock.

Cristobal, April 3, from New York, with 35 cases shellac, 41 crates ranges, 438 pieces angles and beams, 848 bundles steel bars, 16 cases wire, 68 cases caustic soda, 47 cases hardware, 247 pieces iron pipe, 12 cases rubber hose, 20 barrels creosote oil, nine cases paper, eight cases solder, for stock; 138,402 bags cement, for Atlantic and Fifth Divisions; 200 tons pig iron, 30 pieces locomotive tires, 10 cases aluminum, 12 cases electrical material, for Mechanical Division; 15 cases structural steel for Atlantic Division; 25 cases castings, 20 cases electrical material, for First Division.

Advance, April 3, from New York, with 75 cases conduits, 25 reels copper wire, 15 cases castings, for First Division; 5,500 pieces hollow tile, for Second Division; 33 cases boiler fittings, for Fifth Division; 20 cases drugs and sundries, for Sanitary Department; 10 barrels compound, 16 cases wrenches, 17 cases mops, 298 slabs zinc, 500 crates garbage cans, 183 cases water coolers, 24 cases rubber hose, 150 barrels alum, 28 cases cardboard, 300 bags tie plugs, for stock; and a miscellaneous cargo, the whole consisting of 7,440 packages, weighing 535 tons.

Haakon VII, April 4, from St. Mary's Ga., with 2,513 pieces piling, and 3,903 pieces cross-ties, for stock.

Misdirected Letters.

ANCON, C. Z., April 9, 1913.

The following insufficiently addressed letters originating in the United States or its possessions, have been received in the office of the Director of Posts, and may be procured upon request of the addressees:

Alder, T. P.	McCallum, Walter L.
Bryce, Michael	McClain, Miss Edna
Buser, Fred H.	McDonald, Mrs. E.
DeWolf, George (2)	Morganthaler, Frank
Dunn, Oscar T.	Parker, Dr. N. M.
Foster, Capt. John	Rardon, William
Gallimore, Miss Gera	Rowley, Mr. Wm.
Glawson, R. L.	Scheltzer, W. F.
Harvill, Y. L.	Thomas, George
Haspie, Jasper A.	Van Brunt, E. S.
Hennessy, Walter J.	Varona, Camilio
Henrich, Chris	Waddell, Wm. R.
Jackson, Mrs. W. T.	Walcott, Wyburn D.
Jennings, William P.	Weigand, Geo. L.
Jones, George E.	White, Capt. Frank
Kaye, Edgar	Williams, Frank A.
Light, Walter	

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending April 19, 1913. (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
April 13.....	1.55	7.57	2.17	8.15	
April 14.....	2.50	8.57	3.24	9.20	
April 15.....	4.00	10.12	4.42	10.42	
April 16.....	5.15	11.32	5.58		
		P.M.			
April 17.....	12.04	6.27	12.43	7.04	
April 18.....	1.14	7.28	1.42	8.00	
April 19.....	2.11	8.22	2.34	8.50	

RETIREMENT OF CANAL EQUIPMENT.

The following estimate has been prepared showing the amount of Canal and Panama railroad equipment that may be kept in the service after October 1, 1913, and the probable dates after that time when it may be retired:

	Lidger-wood cars.	Steel dump cars.	Steel flat cars.	Plows.	Unload-ers.	Track-shifters.	Spread-ers.	Wreck-ing cranes.	Loco. cranes.	Pile-drivers.	STEAMSHOVELS.		
											95-ton	91-ton	70-ton
Atlantic Division—													
Gatun, January 1, 1914.....		100	21			1	1	1	1				
Gatun, July 1, 1914.....		50	21										
Toro Point, April 1, 1915.....	16	4	3	1	1				3	1			1
Porto Bello, April 1, 1915.....	48	2		2	1				5			3	1
Central Division—													
October 1, 1914.....	800	50	25	15		3	5	1	1	1			3
Second Division—													
January 1, 1915.....		350				1	2		12	2		2	3
Machinery erection—													
July 1, 1914.....									10				
Fifth Division—													
April 1, 1914.....	4	146	20		1		1		3	1		2	2
Fortifications Division—													
January 1, 1914.....										2			
February 1, 1914.....							1						
June 1, 1914.....		60			1				3				
Quartermaster's Department—													
April 1, 1914.....									6				
Lighthouse Subdivision—													
November 1, 1913.....		2											
Panama railroad—													
Maintenance of Way, Feb. 1, 1914.....		30											1
B. and O., April 1, 1914.....		53					2		8	2			
Total.....	868	*817	90	18	4	5	12	2	52	9	9	7	11

*Includes 12 Goodwin ballast cars.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule for moving picture entertainments for the week April 14 to 19 is, as follows: Monday, Cristobal; Tuesday, Gorgona; Wednesday, Empire; Thursday, Culebra; Friday, Corozal; Saturday, Gatun; Friday, Porto Bello.

The standing of the bowling teams in the Isthmian Duckpin League, April 7 is, as follows:

	Won	Lost	P.C.
Gorgona.....	10	5	667
Culebra.....	9	6	600
Empire.....	9	6	600
Cristobal.....	8	7	533
Gatun.....	6	9	400
Corozal.....	3	12	200

The standing of the teams in the American Duckpin League, April 7 is, as follows:

	Won	Lost	P.C.
Empire.....	7	2	778
Gatun.....	4	5	444
Corozal.....	4	5	444
Cristobal.....	3	6	333

CULEBRA.

At the entertainment to be given by the Walter Eccles and The Four College Girls Company on Monday night, April 14, the following prices will obtain: Members, free; nonmembers, adults, 50 cents; children, 25 cents. The program will begin at 8 o'clock.

The local team lost two out of three games to Cristobal in the Isthmian Duckpin League on Saturday, April 5, with the following scores:

	Cristobal.	Culebra.
Barrett.....	82 79 99	Palmer..... 77 85 84
Herrington.....	101 95 96	Silver..... 77 87 82
Weston.....	95 87 106	Brown..... 93 95 77
Smith.....	101 84 86	Case..... 85 102 90
Bullard.....	85 85 91	Kiernan..... 80 80 84
	464 430 478	412 449 417

High scores for the week are, as follows: Steele, 107; Case, 100, 102; DeCora, 107, 105, 102; Herrington, 100; Patterson, 110; Brown, 107.

EMPIRE.

The standing of the local tenpin tournament is, as follows:

	Won	Lost	P.C.
Giants.....	8	1	889
Athletics.....	4	2	667
Senators.....	2	4	333
Cubs.....	2	4	333
White Sox.....	1	2	333
Tigers.....	1	5	167

The high score made so far by any of the league players is 243, which was made during the past week by C. J. Huson. He also holds the high average of 201.1.

The list is ready for the April pool tournament. All contestants are requested to sign without delay.

The March handicap pool tournament was won by Mr. Donnelly. This was a three-game elimination tournament. Mr. Donnelly won twelve games and lost but one. The second place was won by Mr. Clyde Cecil, who won nine games and lost two, while third place was won by Mr. F. G. Miller. Considerable interest was shown in this tournament.

The following program was given at the clubhouse on April 6, by the Gorgona chorus:

Part One—Orchestra, selected, by the Tenth Infantry; "Nancy, my yellow rose," Geibel; song of the pedler, Williams, by Gorgona Chorus; vocal solo, selected, by Mr. Onkon; vocal duet, "Fly away birdling," Abt, by Mr. and Mrs. Kramer; solo, selected, by Mrs. Boyd; "The song of the Triton Taylor; Sleep, little one, sleep, Woole, by Gorgona Chorus.

Part Second—Orchestra, selected, by Tenth Infantry; "Anchored," Watson; "Shoogy Shoo," Abrose, by Gorgona Chorus; "Then you'll remember me," solo, by Mr. Bradsky; "Sweet and low," "Last rose of Summer," "Water lilies," "We're going to leave Gorgona," by Gorgona Chorus. "March Onward," Geibel, by chorus and orchestra; "Anvil Chorus," Verdi, "Soldier's Chorus," Gounod, by chorus and orchestra.

The Isthmian Duckpin tournament games rolled at Empire on Saturday, April 5 resulted, as follows: Empire..... 449.... 480.... 446
Gorgona..... 422.... 399.... 462

The opening of the indoor baseball league will be on April 26, instead of April 19. This leaves an extra week for practice. Candidates for the Empire team are requested to appear for practice twice a week.

GORGONA.

A debating club was organized on Thursday evening, when over 100 men attended the debate given by Messrs. Ewing and Werner vs. Messrs. Borrow and Wight, on the subject of "Resolved, That foreign immigration is not a detriment to the United States. The debate was won by the affirmative. The next debate will be

held on Thursday evening, April 10. A week from Thursday, the club will put on a mock trial.

A "smoker" is being planned for Friday, April 25. The boys' event in the all-around gymnastic contest resulted, as follows: "Tigers" 1, "Athletics" 3. The boys are divided into two classes, or groups. Each group has the same activity and is judged according to its efficiency.

The mens' classes meet on Tuesday and Thursday evenings and the exercises include wrestling, gymnastics, and indoor baseball.

The Culebra chess club played at Gorgona on Saturday evening. Scores:

	Culebra.	Won.	Lost.	Gorgona.	Won.	Lost.
Duhois.....	2	.....	Dr. Levy.....	2	.....
McClure.....	1	1	Taylor.....	1	1	
A. M. Warner.....	2	.....	Norton.....	2	.....
C. Wilson.....	2	.....	Nagel.....	1	1	
Patterson.....	1	1	Strong.....	2	.....
Shropshire.....	2	.....	Verner.....	1	1	
J. F. Warner.....	1	1	Wright.....	2	.....

Totals..... 9 5 5 9

High scores for the week: King, 104, 115, 101; Davis, 103, 104, 102; Denst, 107, 103; Dunlap, 101; Weir, 106; Powell, 106, 101; Phillips, 100; Arnold, 106.

Corozal will bowl at Gorgona on Saturday evening, April 12.

GATUN.

The new class in Spanish includes the following members: Messrs. LeSassier, Ludlum, Bain, E. Brown, Williams, Honor, Joyce, McCann, Appel, Jones, Sexton, Ragan, and Eagan. There are 15 more members enrolled in other Spanish classes.

Gatun won two out of three games at duckpins from Corozal in the Isthmian League series played at Gatun on Saturday evening, April 5. Scores follow:

	Corozal.	Gatun.
Beall.....	76 83 98	Claherty..... 87 78
Sherrard.....	84 72 77	Green..... 84 103 93
Hammer.....	91 81 83	DePoorter..... 84
Webb.....	94 87 67	Wells..... 92 93 78
Dalton.....	96 87 100	DeMoll..... 93 92 106
		Wurster..... 88 95

Totals.... 441 410 425 440 454 454

The Gatun "Stars" of the Isthmian league won two out of three games of duckpins from the Gatun "Outlaws" of the American League on Thursday evening, April 3. The "Outlaws" will play the "Stars" on Thursday, April 10.

The married mens' gymnasium class now numbers 16. In a game of volleyball played on Friday, April 4, the married men defeated the single men by a score of 3 to 2.

CRISTOBAL.

On Friday night, April 11, the Walter Eccles and Four College Girls Company, will give an entertainment. All seats have been reserved. Admission to nonmembers, 50 cents; members free.

The gymnasium classes and indoor baseball practice nights will be on Tuesdays and Thursdays.

PORTO BELLO.

On Thursday night, March 27, Mr. F. E. Jackson of Empire, delivered a lecture, illustrated with slides and films, on the palaces and ruling princes of India. Divine service was conducted by Rev. Carl H. Elliott of Cristobal, on Wednesday night. While Mr. Elliott was holding service in the clubhouse, Rev. Mr. Duncan, representing the Bible Society, was conducting a service among the negroes.

A "Tacky" party was given on Thursday night, April 3. The makeups were unusually good. Among the men, Mr. Hill was voted the most "tacky." On Saturday night, April 5, Messrs. Dwelle, Cullens, McCann, and King of Corozal visited Porto Bello to participate in a "smoker."

MARRIED.

CRANDALL-WATSON—In the Union Church, Cristobal, on April 6, Miss Esther Mildred Watson, of

Northwood Narrows, N. H., to Dr. Walter Midkiff Crandall of Lynn, Mass., the Rev. Carl H. Elliott officiating. Isthmian residence, Taboga sanitarium.

Sale of Furniture.

OFFICE OF THE CHIEF QUARTERMASTER.

(CULEBRA, C. Z., April 7, 1913.

Sealed proposals will be received at this office until 3 p. m., Tuesday, April 22, 1913, for the purchase of any or all of a miscellaneous lot of second hand furniture now stored at the Lirio mill. Full information regarding the items for sale can be secured upon application to the district quartermaster at Culebra. Proposals should be accompanied by certified check, money order, or cash, for five per centum (5%) of amount bid. Envelopes containing proposals should be marked "Proposals for furniture," and addressed to Gen. C. A. Devol, Chief Quartermaster, Culebra, C. Z.

Rainfall from March 1 to 31, 1913, Inclusive.

STATIONS.	Maximum in one day	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	.43	4	.43
Balboa.....	.....	.....	.....
*Miraflores.....	.....	.....	.....
Pedro Miguel.....	.28	5	.30
Rio Grande.....	.56	5	.57
<i>Central Section—</i>			
Culebra.....	.20	5	.22
*Camacho.....	.05	28	.08
Empire.....	.36	25	.36
Gamboa.....	.05	25	.08
*Juan Mina.....	.06	23	.10
Alhajuela.....	.03	6	.03
*El Vigia.....	.25	26	.29
*Gorgona.....	.32	5	1.11
*Frijoles.....	.40	22	.60
Trinidad.....	.18	22-27	1.01
Monte Lirio.....	.12	9	.71
<i>Atlantic Section—</i>			
Gatun.....	.18	26	.79
*Brazos Brook.....	.45	3	1.17
Colon.....	1.72	5	8.11
Porto Bello.....			
*Bocas del Toro.....			

*Standard rain gage—readings at 5 p. m. daily Automatic rain gage at unstarred stations—values midnight to midnight.

March Rainfall for Three Years.

STATIONS	1911	1912	1913	Station Av.	Years of record	Rainy days 1913
<i>Pacific Section—</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>		
Ancon.....	.06	.01	.43	.76	15	1
Balboa.....	.....	.....	.....	.78	14	.....
*Miraflores.....	.....	.....	.....	.72	5	.....
Pedro Miguel.....	.03	.02	.37	.37	6	.....
Rio Grande.....	.06	.03	.30	.32	9	2
<i>Central Section—</i>						
Culebra.....	.06	.02	.57	.68	23	2
*Camacho.....	.13	.00	.....	.50	7	.....
Empire.....	.20	.01	.22	.41	8	3
Gamboa.....	.38	.10	.08	.81	29	3
Juan Mina.....	.22	.07	.36	.22	3	1
Alhajuela.....	.01	.02	.08	.62	14	3
El Vigia.....	.04	.08	.10	.70	5	3
Gorgona.....	.36	.02	.03	.86	8	1
Frijoles.....	.....	.10	.29	.20	2	4
Trinidad.....	2.33	.28	1.11	2.82	6	15
Monte Lirio.....	1.41	.24	.60	3.23	6	3
<i>Atlantic Section—</i>						
Gatun.....	1.80	.55	1.01	2.70	9	12
Brazos Brook.....	1.30	.53	.71	2.88	7	13
Colon.....	1.41	.66	.79	1.65	44	17
Porto Bello.....	2.38	.60	1.17	2.49	6	15

Values in inches.

WEATHER CONDITIONS. CANAL ZONE. MARCH, 1913

Typical dry season weather prevailed on the Isthmus during the month of March. The rainfall was everywhere deficient. Porto Bello reported the highest monthly total, 1.17 inches, while at several stations on the Pacific slope no rain was recorded during the month. The average air temperature and wind movement were well above normal, while there was a general deficiency in atmospheric pressure, relative humidity, and cloudiness. Of the fogs observed, 71 per cent were dissipated by 6.30 a. m.; 83 per cent by 7.30 a. m., and 100 per cent by 8.30 a. m.

STATIONS.	Pressure (reduced to mean of 24 hours.)	Temperature.				Mean relative humidity	Precipitation.			Wind.		
		Mean.	Maximum.	Date.	Minimum.	Date.	Total inches	Station average.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)
Colon.....	29.890	81.4	87	Mar. 25	73	Mar. 26	.79	1.65	17	12,158	N.	36
Culebra.....	29.863	79.8	92	Mar. 27	67	Mar. 16	.57	.68	2	8,083	N. W.	33
Ancon.....	29.847	82.0	95	Mar. 21	68	Mar. 16	.43	.76	1	7,898	N. W.	26

Mar. 17
Mar. 8
Mar. 23

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning April 9, 1913:

FRESH MEATS.	Price.
Mutton—Stewing, per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire, forequarter (not trimmed, 10 pounds and over), per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Leg (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	17
Chops, per pound.....	26
Loin for roasting, per pound.....	26
Cutlets, per pound.....	30
Pork—Loin chops or roast, per pound.....	17
Pigs Head 1—6½ lbs., 1—3 lbs., per pound.....	10
Beef—Stew, per pound.....	8
Plate, per pound.....	9
Corned, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds) per pound.....	18
Sirloin roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, Round, per pound.....	13
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds), per pound.....	20
Tenderloin (Western), per pound.....	30
Venison (Imported), Stew, per pound.....	6
Forequarter, (not under 6½ pounds), per pound.....	9
Rack (not under 5½ pounds) per pound.....	20
Saddle (not under 7½ lbs.), per pound.....	20
Leg (not under 9 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
MISCELLANEOUS.	
Livers—Beef, per pound.....	11
Calf, each.....	60
Half, each.....	30
Steak, Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	13
Frankfurter, per pound.....	13
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	19
Sausage—Meat, per pound.....	20
Sweetbreads—Beef, per pound.....	140
Eggs, fresh, dozen.....	24
one-half dozen only.....	12
Bluefish, per pound.....	15
Halibut, fresh, per pound.....	15
Salmon, per pound.....	12
Oysters, quarts, per keg.....	40
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds each.....	1.25
Fancy roasting, corn fed, about 4½ pounds each.....	1.00
Fowls, each.....	1.00
Ducks, (Western, about 4½ pounds), each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	150
Rabbits, skinned, each.....	30
Ducks, blackhead, pair.....	60
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants, per pair.....	1.30
CURED AND PICKLED MEATS.	
Ham—Sugar cured, per pound.....	20
Sliced, per pound.....	22
Half, for boiling, per pound.....	21
Boiled, per pound.....	28
Hocks, per pound.....	18
Beef, salt, family, per pound.....	12
Bacon—Breakfast, whole piece, per pound.....	25
Sliced, per pound.....	26
Ham, Lunch, per pound.....	32
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00

Price.

Pigs' feet, per pound.....	9
Tongues, per pound.....	18

DAIRY PRODUCTS.

Butter—Creamery, special, per pound.....	41
Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Parmesan, per pound.....	35
Gouda, per pound.....	34
Milk (Certified), per bottle.....	**20
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	125
½-gallon.....	150

VEGETABLES AND FRUITS.

Beets, per pound.....	3
Celery, per head.....	11
Cabbage, per pound.....	3
Cucumbers, per pound.....	18
Carrots, per pound.....	3
Egg plants, each.....	10
Onions, per pound.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	2
Parsnips, per pound.....	3½
Parsley, bunch.....	3
Squash, per pound.....	1½
Turnips, per pound.....	3
Tomatoes.....	7
Apples, per pound.....	5
Grape fruit, each.....	4
Lemons, dozen.....	24
Limes, per 100.....	10
Oranges, Jamaica, per dozen.....	82
Pineapples, each.....	12½

*Indicates reductions from last list.

*Indicates 5 cents allowed for return of bottle.

†Indicates advances on last list.

††Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock supply next lightest weight is supplied and refund note sent for difference.

‡Sold only from commissaries; no orders take for delivery.

Tug Service to Porto Bello and Toro Point.

Following is a schedule of Atlantic Division tugs in the service between Dock 13 and Porto Bello, and Dock 13 and Toro Point.

PORTO BELLO.

Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays—Leave Dock 13 at 5 p. m., arrive Porto Bello 10 p. m., returning leave Porto Bello 11 p. m., arrive Dock 13 at 3 a. m.

Saturdays—Leave Dock 13 at 9 a. m., arrive Porto Bello 11 a. m., returning, leave Porto Bello 2 a. m., arrive pier No. 4, Colon, 4 p. m.

Every Saturday, except the first Saturday after the 20th of each month. *Sailing No. 1*—Leave Dock 13 at 2 p. m., arrive Porto Bello 4 p. m., returning, leave Porto Bello at 4.30 p. m., arrive at pier No. 4, Colon, 6.30 p. m. *Sailing No. 2*—Leave Dock 13 at 6 p. m., arrive Porto Bello 11 p. m., returning, leave Porto Bello 12 mid-night, arrive Dock 1 at 4 a. m.

Every Sunday—Leave Dock 13, 7 p. m., arrive Porto Bello 9 p. m., leave Porto Bello 9 p. m., arrive Dock 13, 11 p. m.

Sundays, immediately following the 20th of each month ONLY—Leave Porto Bello 6 a. m., arrive Dock 13 at 8 a. m.

TORO POINT.

Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays. *Sailing No. 1*—Leave Dock 13 at 6.30 a. m., arrive Toro Point 7 a. m., returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. *Sailing No. 2*—Leave Dock 13 at 5 p. m., arrive Toro Point 5.30 p. m.

Special, Wednesdays, ONLY—Leave Dock 13 at 12 noon, arrive Toro Point 12.30 p. m., returning, leave Toro Point 12.30 p. m., arrive Dock 13 at 1 p. m.

Saturdays. *Sailing No. 1*—Leave Dock 13 at 6.30 a. m., arrive Toro Point 7 a. m., returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. *Sailing No. 2*—Leave Dock 13 at 4.30 p. m., arrive Toro Point 5 p. m., returning, leave Toro Point 5.30 a. m., arrive Dock 13 at 6 p. m.

Sundays. *Sailing No. 1*—Leave Dock 13 at 9.30 a. m., arrive Toro Point 10 a. m.; returning, leave Toro Point at 10.30 a. m., arrive Dock 13 at 11 a. m. *Sailing No. 2*—Leave Dock 13 at 4.30 p. m., arrive Toro Point 5 p. m., returning, leave Toro Point 5.30 p. m., arrive Dock 13 at 5.30 p. m.

Launch Service to Taboga.

The steamer *Samad* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday, and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

A charity ball will be given at the Hotel Washington on April 26 for the benefit of the new Colon orphan asylum.

FOUND—A wedding ring about half a mile south of the Gatun station. Owner may claim on description. S. M. Smith, sanitary inspector, Frijoles.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Allianca.....	P. R. R., Saturday....	Apr. 5
Colon.....	P. R. R., Saturday....	Apr. 12
Advance.....	P. R. R., Saturday....	Apr. 19
Panama.....	P. R. R., Friday....	Apr. 25
Allianca.....	P. R. R., Thursday....	May 1
Colon.....	P. R. R., Wednesday....	May 7
Advance.....	P. R. R., Tuesday....	May 13
Panama.....	P. R. R., Tuesday....	May 20
Allianca.....	P. R. R., Monday....	May 26

CRISTOBAL TO NEW YORK.

Advance.....	P. R. R., Thursday....	Apr. 10
Panama.....	P. R. R., Saturday....	Apr. 12
Allianca.....	P. R. R., Friday....	Apr. 18
Colon.....	P. R. R., Thursday....	Apr. 24
Advance.....	P. R. R., Thursday....	May 1
Panama.....	P. R. R., Wednesday....	May 7
Allianca.....	P. R. R., Tuesday....	May 13
Colon.....	P. R. R., Monday....	May 19
Advance.....	P. R. R., Monday....	May 26

NEW YORK TO COLON.

Zacapa.....	U. F. C., Wednesday....	Apr. 2
Sixola.....	U. F. C., Saturday....	Apr. 5
Emil L. Boas.....	H.-A., Saturday....	Apr. 5
Almirante.....	U. F. C., Wednesday....	Apr. 9
Thames.....	R. M., Saturday....	Apr. 12
Carrillo.....	U. F. C., Saturday....	Apr. 12
Prinz Joachim.....	H.-A., Saturday....	Apr. 12
Santa Marta.....	U. F. C., Wednesday....	Apr. 16
Carl Schurz.....	H.-A., Saturday....	Apr. 19
Pastores.....	U. F. C., Saturday....	Apr. 19
Metapan.....	U. F. C., Wednesday....	Apr. 23
Trent.....	R. M., Saturday....	Apr. 26
Prinz August Wilhelm.....	H.-A., Saturday....	Apr. 26

COLON TO NEW YORK.

Carl Schurz.....	H.-A., Wednesday....	Apr. 9
Metapan.....	U. F. C., Thursday....	Apr. 10
Prinz August Wilhelm.....	H.-A., Tuesday....	Apr. 15
Tives.....	U. F. C., Tuesday....	Apr. 15
Trent.....	R. M., Tuesday....	Apr. 15
Zacapa.....	U. F. C., Thursday....	Apr. 17
Sixola.....	U. F. C., Tuesday....	Apr. 22
Emil L. Boas.....	H.-A., Wednesday....	Apr. 23
Almirante.....	U. F. C., Thursday....	Apr. 24
Magdalena.....	R. M., Tuesday....	Apr. 29
Prinz Joachim.....	H.-A., Tuesday....	Apr. 29

NEW ORLEANS TO COLON.

Abangarez.....	U. F. C., Saturday....	Apr. 5
Heredia.....	U. F. C., Wednesday....	Apr. 9
Atenas.....	U. F. C., Saturday....	Apr. 12
Parismina.....	U. F. C., Wednesday....	Apr. 16
Turrialba.....	U. F. C., Saturday....	Apr. 19
Cartago.....	U. F. C., Wednesday....	Apr. 23
Abangarez.....	U. F. C., Saturday....	Apr. 26

COLON TO NEW ORLEANS.

Turrialba.....	U. F. C., Thursday....	Apr. 10
Cartago.....	U. F. C., Saturday....	Apr. 12
Abangarez.....	U. F. C., Thursday....	Apr. 17
Heredia.....	U. F. C., Saturday....	Apr. 19
Atenas.....	U. F. C., Thursday....	Apr. 24
Parismina.....	U. F. C., Saturday....	Apr. 26

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

Hamburg-American steamers for New York via Kingston and Santiago de Cuba, sail thus: The *Carl Schurz* and the *Emil L. Boas* on alternate Wednesdays at 10 a. m., and the *Prinz Joachim* and the *Prinz August Wilhelm* on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays, at 3 p. m. ships for New York via Kingston, on Tuesdays, at 10 a. m. and Thursdays at 10 a. m.; for Bocas del Toro on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct, Tuesdays at 3 p. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending April 5:

Arrivals—March 29, *Arica* from Buenaventura; March 31, *Guatemala*, from Callao; April 1, *Quito*, from Guayaquil; April 2, *Ucayali* from Valparaiso; April 3, *Ecuador* from Guayaquil; April 3, *City of Sydney*, from San Francisco; April 5, *Pennsylvania*, from San Francisco; April 6, *Santa Rita*, from San Francisco.

Departures—April 1, *Leelanaw*, to San Francisco; April 1, *Pleides*, to San Francisco; April 1, *Chile*, to Guayaquil; April 1, *Peru* (P. M.), to San Francisco, March 31, *Pachita*, to Mollendo; March 31, *Limari*, to Valparaiso.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, APRIL 16, 1913.

No. 34.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Foundation for Lower Approach Wall at Gatun.

The foundation for the center guide wall at the Atlantic approach to Gatun Locks has been completed over its length of 1,016 feet from the fender chains. For a distance of 200 feet, at the outer end, the concrete base rests on piles driven on 3-foot centers, longitudinally and transversely. The remainder of the supporting piles are spaced on 4-foot centers. The foundation appears to be firm, and the erection of the superstructure is being pushed.

The completion of this foundation, assuring steady progress on the approach wall, has important bearing on the date of completion of the Canal. Excavation for its site had been carried to 51 feet below sealevel when, on January 25, a large slide from the east bank carried away tracks, overthrew machinery and covered the site with a layer of mud averaging 10 feet thick. In further developments the sliding threatened the work with delay. Any slide which may occur hereafter at this point will cause no interference. The placing of concrete will go on, and the sliding material will be removed by dredges after water is let in from the Atlantic entrance channel.

Canal Excavation in March.

The grand total of Canal excavation to April 1 was 195,589,407 cubic yards, leaving to be excavated 22,548,892 cubic yards.

The total excavation for the month of March was 2,625,838 cubic yards, as compared with 2,803,015 cubic yards in the corresponding month last year, and 3,327,443 cubic yards for March, 1911.

The dry excavation last month amounted to 1,676,141 cubic yards, and was entirely by steamshovels. The dredges and monitors removed 949,697 cubic yards. The progress in the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 438,757 cubic yards. Of this total, 35,705 cubic yards consisted of dry excavation

at Gatun Locks, and the remainder—403,052 cubic yards—was wet excavation from the Atlantic entrance.

The total excavation in the Central Division was 1,183,900 as compared with 996,800 cubic yards in the preceding month. All of the Central Division excavation during March was from Culebra Cut.

In the Pacific Division, the total excavation was 1,003,532 cubic yards, 456,536 cubic yards of which consisted of dry excavation. Of the 546,645 cubic yards of wet excavation 379,845 cubic yards were taken from the Pacific entrance, and 166,800 cubic yards from the site of the Balboa terminals.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follows:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—	Cu. Yds.	Cu. Yds.	Cu. Yds.
Locks, dam and spillway	35,705		35,705
Mindi Terminal			
Total	35,705		35,705
Wet excavation—			
Atlantic entrance	380,243	22,809	403,052
Locks, dam and spillway			
Terminal			
Total	380,243	22,809	403,052
Total wet and dry excavation	415,948	22,809	438,757

CENTRAL DIVISION.

Dry excavation—		
Culebra Cut	1,183,900	1,183,900
Chagres section		
Obispo Diversion		
Total	1,183,900	1,183,900

PACIFIC DIVISION.

Dry excavation—		
Locks, dams and spillways	29,500	29,500
Terminals	51,387	55,336
Prism	366,000	371,700
Total	446,887	456,536
Wet excavation—		
Pacific entrance	379,845	379,845
Miraflores Locks		
Diversions		
Terminals	166,800	166,800
Total	546,645	546,645
Total wet and dry excavation	993,532	1,003,532

TOTAL CANAL EXCAVATION.

Dry excavation	1,676,141	949,697	2,625,838
Wet excavation	926,888	22,809	949,697
Total	2,603,029	972,506	3,575,535

LOCKS AND DAMS.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	Cu. Yds.	Cu. Yds.
Concrete placed in locks	418,806	134,442	553,248
Concrete placed in dams and spillways	2,653	12,862	15,515
Fill placed in dams	96,110	45,000	141,110

Mean rainfall along Canal (ten stations), 0.33 inches.
By "Work" Excavation is meant excavation actually

made for one of the constituent parts of the Canal such as prism, diversions, or locks, etc.; that is it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

*Includes 13,252 cubic yards laid at Gatun Locks to April 1 by First Division.

†Includes 10,387 cubic yards laid at Pedro Miguel and Miraflores Locks to April 1 by First Division.

Underground Cables in Colon.

All of the electric light and telephone wires of the Panama Railroad Company in Colon, beginning at a point about midway between the passenger station, and extending to Colon beach, have been placed underground. Vitrified conduit, containing six ducts, with 3½-inch openings, encased in two inches of concrete, has been installed from the point south of the freight station to the new Hotel Washington, thence to the rear of the old Washington House, with a three-line branch leading to the private road back of the Panama railroad employees' quarters. One duct has been extended to the sewer pump manhole on Colon beach for the purpose of carrying a 25-cycle line for an electrically-operated sewer pump. Four of the six ducts are designed to take care of the electric wires, one is for the telephone cables, and the sixth is for possible future growth. Manholes of sufficient size to facilitate the drawing in of cables were built of terra cotta tile, concrete, and cement. It was not found possible to keep these manholes free from seepage water from the sea, so openings were made in the sides of each manhole at the level of low tide, low enough to prevent the water from reaching the cables. Although the cables are waterproof, it was thought that their contact with salt water and cement might create a local chemical action that would tend to injure them. The work of removing all of the poles and overhead wires is now in progress.

Panama Tramway System.

The first shipment of four cars for the Panama Tramways Company will be made on the United Fruit Company's steamer *Metapan*, which is scheduled to leave New York on April 23. The remainder of the 11 cars ordered will be shipped in lots of four, or less, on each steamer of the company sailing after that date. It was originally planned to have cars with steel bodies, but owing to the crowded condition of the steel mills, it was decided rather than to incur any further delay to order cars with wooden bodies. The cars will be of the single truck type, each 25 feet long, and each car will seat about 35 passengers. The new car shed, a fireproof structure, consisting of a steel framework, with concrete-lined sides, fitted with iron doors, and the substation, which will house the transformers, are com-

NOTES OF PROGRESS.

(Continued)

pleted. The Canal Commission is building a transmission line to connect the Miraflores power plant with the substation, and has the work nearly finished. A part of the system will be placed in operation as soon as possible after the arrival of the first shipment of cars.

Under a contract between Messrs. R. W. Hebard & Company, Inc., the tramway builders and the Panama Government, dated March 25, 1913, a modern electric light and power plant will be erected on the site of the old Panama railroad building on North Ave-

nue, now used as an office by Messrs. Hebard & Company. It will have a capacity of about 1,200 kilowatts, equivalent to about 1,600 horsepower, and will probably be equipped with Diesel oil engines. The plant is designed to furnish power later for the operation of the tramway system, but will also furnish electric light and power to local consumers. Under its contract, the company agrees to furnish commercial lighting and power at a reduction of about 35 per cent from the prevailing rates, and further agrees to give the Panama Government two per cent of its gross earnings. The Panama Government, on its part agrees to admit material required for the plant, free of duty, for a period of 25 years,

and to give no other electric lighting franchise, containing additional advantages, other than those contained in the contract, in question, for a period of 25 years.

Examination by Board of Local Inspectors.

The Board of Local Inspectors will conduct an examination at the Administration Building, Ancon, on Wednesday, April 23, 1913, beginning promptly at 8 a. m., for persons desiring to secure the following classes of licenses: pilots, masters, mates, engineers, chauffeurs, and navigators of motor boats. All applicants for licenses must procure from the Executive Office, Ancon, forms of application and information respecting the filling out of same, not later than the day previous to the examination. In addition, all persons desiring chauffeurs' licenses must provide themselves with automobiles with which to demonstrate their ability to operate same.

Canal Zone Postal Savings Bank Transactions.

A statement of postal savings bank transactions at Canal Zone postoffices for the month of March, follows:

NAME OF OFFICE.	Postal savings certificates issued.	Postal savings certificates paid.
Ancon.....	8,906.00	6,900.00
Balboa.....	10,680.00	6,795.00
Bas Obispo.....	1,954.00	560.00
Corozal.....	18,998.00	12,784.00
Cristobal.....	12,940.00	11,642.00
Culebra.....	11,103.00	7,290.00
Empire.....	5,802.00	3,546.00
Gatun.....	18,429.00	10,537.00
Gorgona.....	13,108.00	12,552.00
Las Cascadas.....	6,413.00	3,141.00
Matichin.....	780.00	419.00
Miraflores.....	6,592.00	4,435.00
Paraiso.....	9,707.00	5,334.00
Pedro Miguel.....	13,392.00	8,827.00
Cristobal, Sta. "A".....	850.00	230.00
Cristobal, Sta. "B".....	1,681.00	2,109.00
Total.....	\$141,335.00	\$97,101.00

Deposits on hand March 1, 1913....	\$577,850.00
Amount deposited in March.....	141,335.00
Amount withdrawn in March.....	
Balance on hand April 1, 1913.....	\$97,101.00
	622,084.00
	\$719,185.00
	\$719,185.00

Fire at Empire.

A fire occurred in the Pennsylvania House at Empire at 8.29 p.m., on April 8, caused by the overturning of a lamp. The damage to the premises was unimportant. Mrs. Samuel Simpson, wife of one of the occupants, was severely burned about the body by her clothing's becoming ignited while she was trying to extinguish the fire. She is now at Ancon Hospital and will probably recover.

CONCRETE WORK IN THE LOCKS AND SPILLWAYS.

Over 99 per cent of the total of 4,446,530 cubic yards of concrete to be placed in the locks had been laid at the close of work on April 12, the amount in place being 4,425,410 cubic yards.

GATUN LOCKS AND SPILLWAY.

About 98 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on April 12, being 2,013,511 cubic yards, out of a total of 2,043,730. In the spillway of Gatun Dam there had been placed 224,253 cubic yards out of a total of 225,000 cubic yards. A statement of the amount placed each working day of the week ending April 12, and of the total, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			Large stone.	Total.	SPILLWAY.		
	Concrete placed.	Hours worked.	No. of mixers.			Concrete laid	Hours worked.	No. mixers used
	Cu. Yds.					Cu. Yds.		
April 6.....	480	8.00	2		480			
April 7.....	918	15.30	2		918	120	7.00	1
April 8.....	1,296	21.60	3		1,296	60	3.00	1
April 9.....	828	13.80	2		828	116	6.00	1
April 10.....	570	9.50	2		570	140	6.50	1
April 11.....	924	15.40	2		924	124	7.50	1
April 12.....	854	14.24	2		854	172	8.00	1
Total.....	5,870	97.84	2.1		5,870	732	38.00	
Previously reported.....					2,007,641	223,521		
Grand total.....					2,013,511	224,253		

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 919,503 cubic yards, have been placed at the close of work on April 12. The record for each working day of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			1-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixer.	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.
April 7				77	8.00	1			77
April 8				63	8.00	1			63
April 9				80	8.00	1			80
April 10									
April 11				11	1.00	1			11
April 12				115	9.50	1			115
Total				346	34.50	.83			346
Previously reported								4,493	919,157
Grand total								4,493	919,503

MIRAFLORES LOCKS AND SPILLWAY.

Over 99 per cent of the concrete for the system of two twin locks at Miraflores was in place on April 12, the total amount on that date being 1,491,585 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each day worked last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 1-cubic yard mixers.			Mixed by hand.	Large stone.	Total.	SPILLWAY.						Total.	
										CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 1-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers				Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.				Cu. Yds.			Cu. Yds.
April 7	558	18.17	6	117	12.00	2			675	140				242	12.00	2	140
April 8	718	16.17	6	27	3.00	1			745	238				196	11.00	2	480
April 9	604	16.16	6	29	3.00	1			633	304				94	5.00	1	500
April 10	364	10.00	6	10	1.00	1		8	382	30		See time under locks.		111	6.00	1	124
April 11	544	11.00	6	59	7.00	1			603	128				90	12.00	1	239
April 12	452	13.66	6	18	9.00	1		36	506	132							222
Total	3,240	85.16	6	260	35.00	1.17	44		3,544	972				733	46 00	1.17	1,705
Prev'tly reported									3,693	1,488,041							21,381
Grand total									3,693	1,491,585							23,086

LABOR FORCE AND QUARTERS IN MARCH.

Largest Force Ever Engaged in the Canal Construction

The force report for March 26 shows the actual working force of the Canal Commission to be 32,567: of the Panama railroad 6,522, and of the contractors 5,644, a total effective working force of 44,733 men. This is the largest force the Canal Commission or the Panama Railroad have ever employed, and is the largest total ever shown in the history of the Canal. The gold force on the Canal work, composed almost exclusively of white Americans, was 4,487, a gain of three over the previous month. The total Canal force, by divisions, was as follows:

DEPARTMENT OR DIVISION	SILVER EMPLOYEES*										Total silver	Total gold	Grand total		
	Artisans.					European laborers.		West Indian laborers.							
	Monthly	44 cents.	32 cents.	25 cents.	20 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.				10 cents.	
Construction and Engineering	4,290	10	9,323	1,153	4,189	3,628		944	110	357	5,821	2,901	23,690	3,425	27,115
Civil Administration	150				23							18	197	343	540
Sanitation	660			3	4						72	262	1,006	353	1,359
Quartermaster's	875		180		192	60	33		4	29		94	752	177	2,408
Subsistence	909			2	1	1							933	51	984
Disbursements														24	31
Examination of Accounts	16												16	114	130
Total	6,906	10	9,510	1,353	4,277	3,661		948	130	357	5,987	3,932	28,089	4,487	32,567
Month previous	6,880	10	9,157	1,225	4,243	3,527		940	142	107	5,886	3,811	27,540	4,484	32,024

Panama railroad force, 5,248; Panama railroad commissary force, 1,274. Total, 6,522. Grand total, 39,089
*All wages specified are in gold. †Includes 290 at 7 cents, and nine at 5 cents.

The force report of the Department of Construction and Engineering, including the employes of contractors, as of March 26, was as follows:

DIVISION.	SILVER EMPLOYES*												Total silver.	Total gold.	Grand total.
	Artisans.					European laborers.		West Indian laborers.							
	Monthly	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.			
Chief Engineer.....	1,687	1	175	618	2,463	1,454	607	29	1	3,252	597	10,967	1,484	12,451	
Mechanical Division	261	6	2 33	78	434	50	1	...	1,162	79	2,108	800	2,908		
Atlantic Division.....	1,314	4	6 97	333	861	681	243	...	688	141	4,405	548	4,953		
Central Division.....	1,028	...	18	124	431	1,443	93	81	356	719	1,793	6,210	593	6,803	
Pacific Division															
U. S. Steel Products Co.....												95	113	208	
Chicago House Wrecking Co.....												13	4	17	
McClintic-Marshall Co.....												4,869	550	5,419	
Total.....	4,290	10	9 323	1,153	4,189	3,628	944	110	357	5,821	2,901	23,690	3,425	27,115	
Month previous	4,272	10	9 109	1,089	4,197	3,493	936	112	106	5,663	2,552	23,270	3,405	26,675	

*All wages specified are in gold. †Includes 252 at 7 cents and 3 at 5 cents.

QUARTERS.

A report of Commission quarters occupied on March 31, follows:

PLACE.	Gold.			Europeans.			West Indians.		
	Men	Women	Children	Men	Women	Children	Men	Women	Children
Balboa	233	36	44	409			606		
Ancon	506	306	221	5			815	4	
Corozal	647	96	103	420			449	5	5
Miraflores	22	2	3	466	3	10	284	6	4
Pedro Miguel	362	79	82	301	3	3	214	36	31
Paraiso	314	79	84	160	3	11	226	104	151
Culebra	362	175	163	455	46	85	394	112	167
Empire	510	316	294	414	54	76	513	145	221
Las Cascadas	172	107	112	29	17	29	226	157	128
Bas Obispo	75	53	40	95	23	37	136	52	75
Gorgona	694	212	270	65	4	9	270	85	141
Gatun	891	208	204	1,223	20	30	1,027	29	43
Cristobal	833	282	286	56			1,430	229	351
Toro Point	52	15	16	93			393		
Porto Bello	57	30	33	128			242	2	3
Total	5,730	1,996	1,955	4,319	173	290	7,705	967	1,320

(1) Includes Sabanas police station, Taboga Island, Culebra Island, Palo Seco and Naos Island. (2) Includes Europeans and Asiatics. (3) Includes 71 Panamanians. (4) Includes 23 East Indians. (5) Includes 73 Panamanians. (6) Includes Matichin. (7) Includes Colon Hospital. (8) Includes 54 Asiatics, 84 Panamanians and 12 U. S. citizens. The gold force included in the above list consists of 45 families, and 671 bachelors.

Naturalization Case of Miss Kurath.

A news item published recently in the American press stated in substance that Judge Thompson of Philadelphia had rendered a decision in the naturalization case of Miss Louise Kurath, formerly in the employ of the Isthmian Canal Commission as a nurse, declaring that residence in the Canal Zone,

for the purpose of naturalization as American citizens, is residence within the territory of the United States. The Department of Civil Administration has made inquiry with reference to the facts in this case of the Division of Naturalization at Washington. A reply has been received in which it is stated that Judge Thompson did not hand down an

opinion in the case, and that his verbal expression in admitting Miss Kurath to citizenship had no such broad application as the dispatches indicated. Judge Thompson did not hold that residence in the Canal Zone was residence in the United States. He did, however, hold that, because of certain peculiar facts in connection with the case of Miss Kurath, her residence was in Philadelphia, and that her absence was merely incident to her employment as a nurse.

Colon Hospital Changes.

Dr. C. E. Phillips has been transferred to Colon Hospital to be chief of the surgical clinic, vice Dr. Noland resigned. Dr. Phillips will hold a clinic for out patients every day during the week except Sunday, from 2 to 3 p. m., instead of the clinics formerly held on Wednesday afternoon and Sunday morning.

Hotel Washington Service.

The room rates at the new Hotel Washington on Colon Beach are as follows:

JANUARY 1 TO JUNE 1.

Room with bath, \$3 a day; \$1 for each additional person in a room.

Room with shower bath, \$4 a day; \$1 for each additional person in a room.

Room with tub bath, toilet, and shower, \$5 a day; \$1 for each additional person in a room.

JUNE 1 TO DECEMBER 1.

Room without bath \$2 a day; \$1 for each additional person in a room.

Room with shower bath \$3 a day; \$1 for each additional person in a room.

Room with tub bath, toilet, etc., \$4 a day; \$1 for each additional person in a room.

A reduction of 50 cents a room is made from the regular rates to all gold employes of the Canal Commission and Panama railroad, but no reduction is made in the price of meals. The *table d'hôte* meals are \$1 each, and an *a la carte* service is in effect from 6.30 a. m. to 11 p. m.

One of the features of the hotel is a small printing plant, equipped with several fonts of artistic letter job type, and an improved Chandler and Price 10 by 15-inch job press, operated by an electric motor. All of the hotel stationery is printed and embossed at this plant.

PERSONAL.

Lieut.-Col. Ezra B. Fuller, U. S. A., retired, librarian of the Army Staff College and Special Service Schools at Fort Leavenworth, Kan., is spending a few days on the Isthmus viewing the Canal work.

Capt. R. E. Wood, accompanied by his family, sailed for the United States on the *Cristobal*, on Sunday, April 13, on his annual leave of absence.

Dr. Lloyd Noland, chief of the surgical clinic at Colon Hospital, has resigned, effective April 9, and sailed for New Orleans on the steamship *Turrialba* on the following day, having accepted a position with the Tennessee Coal and Iron Company, with headquarters at Birmingham, Ala. He entered the Canal service on July 6, 1904, was appointed superintendent of the old Miraflores hospital for the insane on April 18, 1905, pathologist at Colon Hospital on October 1, 1905, and chief of the surgical clinic at Colon Hospital on August 1, 1907.

Dr. J. C. Perry returned from his annual leave of absence on Friday, April 11, on the *Allanah*.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION

[All figures are in cubic yards unless otherwise noted.]

DRY EXCAVATION.

CENTRAL DIVISION.

MONTHS.	CULEBRA SECTION.*				CHARLES SECTION.**				MIRAFLORES SECTION***			
	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.	1906.	1907.	1908.	1909.
Jan.	120,990	566,750	1,227,032	1,130,219	1,324,693	1,356,394	1,416,035	1,135,580	380,309	355,388	28,387	28,387
Feb.	168,410	630,112	1,285,265	1,194,454	1,350,173	1,409,338	1,450,560	996,800	450,182	219,516	66,115	66,115
Mar.	269,175	845,420	1,290,855	1,341,507	1,500,278	1,728,745	1,830,618	1,183,540	631,401	484,846	90,588	90,588
Apr.	213,177	870,526	1,241,571	1,376,746	1,388,845	1,414,336	1,485,216	1,010,020	510,020	478,777	102,101	172,000
May	199,399	690,465	960,540	1,136,963	1,069,239	1,292,100	1,405,700	1,010,020	486,170	295,974	29,798	12,544
June	21,623	31,586	1,131,335	1,212,114	1,405,131	1,401,016	1,348,750	1,010,020	275,900	166,136	30,280	8,474
July	151,259	770,570	1,131,335	1,212,114	1,405,131	1,401,016	1,348,750	1,010,020	275,900	166,136	30,280	8,474
Aug.	211,823	751,846	1,172,840	1,212,114	1,376,711	1,414,336	1,409,142	1,010,020	251,515	234,404	21,897	7,111
Sept.	377,009	751,846	1,172,840	1,212,114	1,376,711	1,414,336	1,409,142	1,010,020	251,515	234,404	21,897	7,111
Oct.	211,823	751,846	1,172,840	1,212,114	1,376,711	1,414,336	1,409,142	1,010,020	251,515	234,404	21,897	7,111
Nov.	211,823	751,846	1,172,840	1,212,114	1,376,711	1,414,336	1,409,142	1,010,020	251,515	234,404	21,897	7,111
Dec.	31,689	1,135,485	1,101,016	1,152,032	1,211,400	1,371,082	1,054,510	1,054,510	105,084	197,431	10,816	4,056
Totals	2,702,901	9,177,130	13,912,453	14,557,034	15,308,599	16,596,893	15,018,413	13,016,381	3,752,409	3,573,601	1,027,160	4,056

*Concrete in dams to April 1, 1913. Gatun spillways 22,192 cu yds. Miraflores dam and spillways 21,800 cu yds. Pedro Miguel dam 1,289 cu yds. Total 45,281 cu yds. in 1913. In 1914 and 1915, 497,603 cu yds. in 1914 and 1915.

**Concrete in locks to April 1, 1913. Gatun locks 22,192 cu yds. Miraflores locks 21,800 cu yds. Pedro Miguel locks 1,289 cu yds. Total 45,281 cu yds. in 1913. In 1914 and 1915, 497,603 cu yds. in 1914 and 1915.

***Concrete in locks to April 1, 1913. Gatun locks 22,192 cu yds. Miraflores locks 21,800 cu yds. Pedro Miguel locks 1,289 cu yds. Total 45,281 cu yds. in 1913. In 1914 and 1915, 497,603 cu yds. in 1914 and 1915.

MONTHS.	ATLANTIC DIVISION.†				PACIFIC DIVISION.‡				MIRAFLORES LOCKS, DAMS AND SPILLWAYS.††			
	1909.	1910.	1911.	1912.	1909.	1910.	1911.	1912.	1909.	1910.	1911.	1912.
Jan.	102,690	125,010	65,889	1,330	46,272	83,726	27,320	15,689	61,207	31,376	48,744	95,609
Feb.	95,031	123,718	50,511	1,284	46,272	83,726	27,320	15,689	53,680	15,300	12,936	47,426
Mar.	102,690	125,010	65,889	1,330	46,272	83,726	27,320	15,689	40,417	15,189	7,279	29,352
Apr.	70,009	103,243	11,548	27,144	24,280	57,513	10,405	5,905	17,588	20,250	79,551	29,684
May	36,556	87,988	17,627	24,280	24,280	70,971	10,405	5,905	55,653	20,250	57,925	13,996
June	36,556	87,988	17,627	24,280	24,280	70,971	10,405	5,905	55,653	20,250	57,925	13,996
July	36,556	87,988	17,627	24,280	24,280	70,971	10,405	5,905	55,653	20,250	57,925	13,996
Aug.	36,556	87,988	17,627	24,280	24,280	70,971	10,405	5,905	55,653	20,250	57,925	13,996
Sept.	36,556	87,988	17,627	24,280	24,280	70,971	10,405	5,905	55,653	20,250	57,925	13,996
Oct.	36,556	87,988	17,627	24,280	24,280	70,971	10,405	5,905	55,653	20,250	57,925	13,996
Nov.	36,556	87,988	17,627	24,280	24,280	70,971	10,405	5,905	55,653	20,250	57,925	13,996
Dec.	36,556	87,988	17,627	24,280	24,280	70,971	10,405	5,905	55,653	20,250	57,925	13,996
Totals	793,835	1,238,234	1,238,582	97,410	93,719	739,355	1,238,412	82,399	110,039	2,315	511,933	310,451

†Total to April 1, 1913, 91,847,517 cubic yards. Excavated 1904, 243,472 cubic yards; 1905, 914,254. ‡Total to April 1, 1913, 192,769 cu yds. 1907, 192,769 cu yds.; 1908, 3,787,992 cu yds.; 1909, 192,769 cu yds.; 1910, 192,769 cu yds.; 1911, 192,769 cu yds.; 1912, 192,769 cu yds.; 1913, 192,769 cu yds. ††Total to April 1, 1913, 192,769 cu yds. 1907, 192,769 cu yds.; 1908, 3,787,992 cu yds.; 1909, 192,769 cu yds.; 1910, 192,769 cu yds.; 1911, 192,769 cu yds.; 1912, 192,769 cu yds.; 1913, 192,769 cu yds. ‡‡Total to April 1, 1913, 192,769 cu yds. 1907, 192,769 cu yds.; 1908, 3,787,992 cu yds.; 1909, 192,769 cu yds.; 1910, 192,769 cu yds.; 1911, 192,769 cu yds.; 1912, 192,769 cu yds.; 1913, 192,769 cu yds.

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CONCRETE IN LOCKS AND DAMS.*

MONTHS.	GATUN LOCKS*				PEDRO MIGUEL LOCKS††				MIRAFLORES LOCKS‡‡			
	1911.	1912.	1913.	1914.	1911.	1912.	1913.	1914.	1911.	1912.	1913.	1914.
Jan.	72,019	34,008	28,085	38,513	15,013	4,651	21,013	48,416	21,013	48,416	50,456	50,456
Feb.	72,019	34,008	28,085	38,513	15,013	4,651	21,013	48,416	21,013	48,416	50,456	50,456
Mar.	72,019	34,008	28,085	38,513	15,013	4,651	21,013	48,416	21,013	48,416	50,456	50,456
Apr.	72,019	34,008	28,085	38,513	15,013	4,651	21,013	48,416	21,013	48,416	50,456	50,456
May	72,019	34,008	28,085	38,513	15,013	4,651	21,013	48,416	21,013	48,416	50,456	50,456
June	72,019	34,008	28,085	38,513	15,013	4,651	21,013	48,416	21,013	48,416	50,456	50,456
July	72,019	34,008	28,085	38,513	15,013	4,651	21,013	48,416	21,013	48,416	50,456	50,456
Aug.	72,019	34,008	28,085	38,513	15,013	4,651	21,013	48,416	21,013	48,416	50,456	50,456
Sept.	72,019	34,008	28,085	38,513	15,013	4,651	21,013	48,416	21,013	48,416	50,456	50,456
Oct.	72,019	34,008	28,085	38,513	15,013	4,651	21,013	48,416	21,013	48,416	50,456	50,456
Nov.	72,019	34,008	28,085	38,513	15,013	4,651	21,013	48,416	21,013	48,416	50,456	50,456
Dec.	72,019	34,008	28,085	38,513	15,013	4,651	21,013	48,416	21,013	48,416	50,456	50,456
Totals	858,591	1,179,805	1,028,405	1,179,805	30,819,676	3,358	174,237	74,181,006	65			

*Concrete in locks to April 1, 1913. Gatun locks 22,192 cu yds. Miraflores locks 21,800 cu yds. Pedro Miguel locks 1,289 cu yds. Total 45,281 cu yds. in 1913. In 1914 and 1915, 497,603 cu yds. in 1914 and 1915.

††Concrete in locks to April 1, 1913. Gatun locks 22,192 cu yds. Miraflores locks 21,800 cu yds. Pedro Miguel locks 1,289 cu yds. Total 45,281 cu yds. in 1913. In 1914 and 1915, 497,603 cu yds. in 1914 and 1915.

‡‡Concrete in locks to April 1, 1913. Gatun locks 22,192 cu yds. Miraflores locks 21,800 cu yds. Pedro Miguel locks 1,289 cu yds. Total 45,281 cu yds. in 1913. In 1914 and 1915, 497,603 cu yds. in 1914 and 1915.

YEAR	GATUN				FIDRO MICHU		MIRAFLORES			
	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry
To Jan'y 1, 1911	Cu Yds 583,976	Cu Yds 6,128,108	cu Yds 260,882	cu Yds 2,472	Cu Yds 609,363	Cu Yds 460,512	Cu Yds 418,062	Cu Yds 140,495	Cu Yds 140,495	Cu Yds 140,495
1911	3,393,388	2,670,086	57,679	396,336	460,512	418,062	140,495	140,495	140,495	140,495
1912	107,501	2,499,199	35,215	29,198	34,551	29,198	29,198	29,198	29,198	29,198
1913										

HYDRAULIC WORK ON SLIDES.

Monitors to be Used for Sluicing Tops and Relieving Pressure.

Cucaracha slide and the slide immediately north of Gold Hill have broken back so far from the line of the Canal that the slope of the earth at their outer edges is away from the channel. Separating these slides, Gold Hill rises to elevation 652 feet above sealevel and presents a sheer face of dark, hard rock 482 feet above the Canal bottom; it is a mass of breccia which intrusions of basaltic lava pushed upward through several hundred feet of soft overlying formations. This mass stands as firm as Gibraltar, while the soft material flanking it at the crest of the continental divide is involved in slides which, of all those along Culebra Cut, are exceeded in volume only by the slide diagonally opposite, on the west bank at Culebra. No other breaks reach as high above the Canal bottom.

The height of the tops and the outward slope of the adjacent ground will enable the use of hydraulic monitors in the adopted practice of excavating at the tops of slides to relieve the pressure. Equipment used in the hydraulic excavation south of Miraflores Locks is being installed for the purpose of sluicing material back into the valley toward which the earth slopes on the two sides and at the rear of Gold Hill. The surface over which it is proposed to waste the spoil is about 240 feet above sealevel. The construction of flumes on grades of 4.6 and 5 per cent will allow the sluicing of earth 330 feet above sealevel.

Sluicing will begin at the top of the slide to the north of Gold Hill. Under the original survey, it was estimated that 1,400,000 cubic yards were to be removed from this area, but a later break of the earth, farther back, has rendered estimates of the extent of operations only approximate. It is estimated that between 1,000,000 and 1,500,000 cubic yards can be removed economically in the Cucaracha territory, in addition to that which will be sluiced down the slide into the Canal, to be removed by suction dredge. The material to be excavated is mostly soft earth, and includes a dump made from the French excavation.

Water will be supplied by damming the upper Obispo and several of its tributaries, draining a watershed with a total area of 4.1 square miles. This will be accomplished without difficulty, because the course of the stream is crossed by an American dump below which 20-inch pipes were laid for drainage. The water can be dammed by raising the pipe intakes with vertical elbows. Foundations and retaining walls for the pumping station have been built of concrete at a point near the relocated line of the Panama railroad, about four miles above Pedro Miguel, and 3,000 feet east of the Canal, opposite Culebra. The station is to be equipped with half of the Agua Dulce pumping plant. The two 24-inch triple expansion horizontal pumping engines are stored on the ground, and the 500-horsepower boilers to supply them are being installed. Each unit was originally rated to deliver 7,500 gallons of water a minute at 150 pounds pressure. In their worn condition, however, and in forcing water against a 100-foot rise to the level of excavation, they will be counted on to furnish water at the monitors under pressure of from 80 to 85 pounds to the square inch.

The pipe line from the station to the top of the slide on the north side of Gold Hill is approximately a mile in length. It reduces in

diameter from 40 to 32 and 24 inches, and is laid with only one elbow. When the excavation is extended toward Cucaracha slide an electrically driven "booster" pump is to be installed on the northeast side of Gold Hill at elevation plus 425 feet, 200 feet above the pumping station. The approach to Cucaracha slide will be made through a saddle between the main part of Gold Hill and an adjacent knob.

A force of about 200 men is engaged in the preparatory work of erecting the station, laying and riveting the pipeline, constructing flumes, clearing and drilling. The pumping plant and machine shop are close to a spur extending from the relocated Panama railroad to the Obispo Diversion track, and additional tracks render the area accessible to trains and locomotive cranes for the handling of heavy parts. Water and compressed air for construction purposes are delivered from connections with the Culebra Cut service. The foundation for a fuel oil tank to hold 1,000 barrels is laid near the station. It is proposed to have a section of the Government's permanent transisthmian oil line laid along the relocated railroad, from the pumping station to Paraiso in time for the sluicing operations and to make connections at Paraiso with the line of the Union Oil Company. It is expected that sluicing will begin about the middle of June, by the time the rainy season flow of the streams has accumulated a sufficient reserve supply of water at the pumping plant.

New Camp for West Indian Laborers at Balboa.

A camp for West Indian laborers on the Pacific terminal work, and later, for the shop and drydock forces, etc., will be laid out on the Balboa dump, south of and along the new Sosa road, in the vicinity of the new Commission oil tanks. The plan is to erect the barracks for the silver bachelor employees on one side of Central avenue, which will lead off from Sosa road, and the quarters for the silver married employees on the other side. The material for the buildings will be provided by the dismantling of laborers' barracks at various points along the Canal. The resident engineer of the Fifth Division has been charged with the work of preparing the layout of the new camp, including water and sewer systems, and the erection of the buildings will proceed with the least possible delay, in order that the existing congestion in silver quarters at the Pacific end may be relieved. The proposed layout will provide at present for five barracks for silver employees which will be removed from Gorgona.

Operations of Insurance Companies in Canal Zone.

The following is a statement of the operations of fire, life, and miscellaneous insurance companies doing business in the Canal Zone, during the year 1912:

FIRE INSURANCE COMPANIES.	
Net premiums received.....	\$2,993.70
Net losses incurred.....	None
Risks written and renewed.....	68
LIFE INSURANCE COMPANIES.	
Insurance in force December 31, 1911...	\$98,000.00
Insurance written in 1912.....	227,016.00
Premiums received in 1912.....	11,753.53
Losses incurred in 1912.....	None
Insurance in force December 31, 1912...	280,016.00
MISCELLANEOUS COMPANIES.	
Premiums received in 1912.....	\$37,088.95
Losses paid in 1912.....	18,172.96
LOSSES SUBDIVIDED ACCORDING TO CLASSES OF BUSINESS.	
Fidelity.....	\$1,812.10
Accident.....	13,490.68
Health.....	2,870.18
Total	\$18,172.96

SOCIAL LIFE OF THE ZONE.

First Jewish Temple on Isthmus.

The opening of the first Jewish temple on the Isthmus of Panama took place in Colon, on Sunday afternoon, April 13, in the presence of a large gathering which included the President of the Republic and his aide, Senor Estrepaut, the Secretary of State, Senor Filos, the governor of Colon, Senor Arcia, the mayors of the cities of Colon and Panama and many prominent business men of both cities. The ceremonies of dedication were begun with the opening of the ark, following which the "perpetual light" was kindled while the choir sang the Hebrew hymn, "To Light." Following this the doors of the synagogue were thrown open in response to loud knocking and the rabbi and dignitaries of the congregation bearing the scrolls of the law entered. After the processional the scrolls were placed in the ark and its doors were closed. A historical address was made by Mr. Albergá, the first president of the Hebrew congregation in Colon. Congratulatory address were made by the members of the Panama society. The sermon was delivered by Rabbi Dobrin and was followed by evening prayer and the Hallelujah sung by the choir.

The synagogue is built on land granted by the Panama Railroad Company in the new fill on Broadway. It is a large frame building with a red roof and high arching dome. The structure is raised on concrete supports six feet high, and beneath it there is a solid concrete floor. The windows are of colored glass. The ark is built of solid mahogany. The cost of the temple was \$5,000. The cornerstone was laid on September 17, 1912. The services in the temple will be on Friday evenings at 6 o'clock and on Saturday mornings at 9 o'clock.

There are two Hebrew congregations on the Isthmus. The Colon congregation, "Kaal Kadosk Yangakob" (Holy House of Jacob) was organized in 1896, at which time there were nearly 200 members. The present membership is 90. In Panama the congregation "Kol Sherith Israel," (Holy House of Israel), was organized over thirty years ago, and has now 200 members.

Annual Dinner of the "Incas."

Notice of the sixth annual dinner of the Inca Society, to be held at the Tivoli Hotel on Saturday evening, May 3, has been issued. In view of the number of removals, resignations, transfers, etc., which have taken place among the members since the last annual dinner, the secretary does not know all of their present addresses. If any member is overlooked in the matter of an invitation, he is requested to communicate either with the secretary, Mr. M. C. Pratt, or Col. Tom M. Cooke, Ancon.

Orphanage Asylum Charity Ball.

The patronesses for the charity ball to be given at the Hotel Washington, Colon, on Saturday evening, April 26, in aid of the Sisters' Orphan Asylum are Mrs. Goethals, Mrs. Porras, Mrs. Rousseau, Mrs. Devol, Mrs. Burke, Mrs. Smith. The tickets, which admit a lady and gentleman are \$5, United States currency. The holder is entitled to transportation from any point on the Panama railroad and return. A special train will leave Colon for the convenience of the guests at midnight. The ball is in charge of two committees; the

first, an executive committee, composed of Mrs. C. C. Pierce, Mrs. Elder, Mrs. Murphy, and Dr. Weigle; the second, a committee, in charge of the printing, Mrs. Butters, Mrs. McCormick, Mrs. Kerr, and Mrs. Doyle.

A history of the orphanage, which will be opened this month, was published in THE CANAL RECORD of April 2.

United Spanish War Veterans.

The regular meeting of Chagres Camp No. 1 will be held at 8 p. m., on April 26, at the K. of P. hall, building No. 1, Cristobal.

Women's Clubs.

The last meeting of the executive board of the Canal Zone Federation of Women's Clubs will be held at the Hotel Washington on Saturday afternoon, April 19. It is urgently requested that every member of the board be present. There will be a lunch at the Hotel Washington at one o'clock, and the business meeting will follow immediately.

The Ancon Study Club has in view an amendment to its by-laws, which will admit to membership those women who desire to affiliate with the club as associate members. During the absence from Ancon of the chairman, Mrs. H. C. Shick, the presiding officer is Mrs. George E. Wanson.

Annual Outing of Canal Zone High School.

The annual outing of the Canal Zone High School was held on Saturday April 12, the day being spent on Taboguilla Island. The excursion left Panama in one of the Pinel launches after the arrival of the morning train from Colon. Pupils of the three branches of the high school at Gatun, Empire and Ancon, attended. They were chaperoned by three high school teachers, Miss Hine, Miss Reid, and Mr. Flory.

Accounting of Receipts from Benefit Baseball Game.

A committee, composed of Messrs. J. D. Eason, B. M. Litt, and H. H. Hudson met at Empire on the evening of April 2 for the purpose of auditing the receipts of the baseball game played at Empire Park on Sunday, March 16, for the benefit of Mrs. J. F. Catto, whose husband met his death on the night of February 21. Messrs. Bolen, Kozier, Kirk and Graham, who had charge of the sale of tickets for the game, rendered a final accounting to the committee, and it will be a source of satisfaction to everyone on the Isthmus who generously contributed to this worthy cause to know that the amount turned over to the committee was \$1,445. A draft for this amount has been turned over to Mrs. Catto.

Memorial Day Observance.

There will be a joint meeting of the American Veterans of Foreign Service, Army and Navy Union, and United Spanish War Veterans at building No. 1, Cristobal, on Sunday, April 20, immediately after the arrival on train No. 22, to make arrangements for the observance of Memorial Day, May 30, at Mount Hope. Members of all fraternal organizations are invited to attend.

Until further notice the hours for music at the Strangers Club will be from 6 to 11 on Thursdays and from 6.30 to 9 on Sundays. Informal dance every Thursday evening.

The regular dance of the Washington Cottillion Club will be held on April 19, 1913, at the Hotel Washington.

OFFICIAL CIRCULARS.

Removing Old Cards from P. R. R. Cars.

CULEBRA, C. Z., April 8, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

Attention is invited to circular issued by this office under date of January 21, 1913, as follows:

"Some confusion has arisen through failure to remove old cards from P. R. R. cars that have been emptied. Please see that these cards are removed in the future as soon as the cars are empty."

The Panama Railroad Company reports that the instructions contained in the above circular are not being carried out. Please again bring the matter to the attention of all concerned.

GEO. W. GOETHALS, Chairman.

Transfer of I. C. C. Artisans to Classified Service.

CULEBRA, C. Z., March 19, 1913.

CIRCULAR No. 482:

1. The following Executive Order is published for the information and guidance of all concerned:

EXECUTIVE ORDER.

All artisans, citizens of the United States, who are or may hereafter be in the service of the Isthmian Canal Commission and who have rendered one year's satisfactory service on the Isthmus of Panama, and who may be recommended, upon discharge, for transfer, may be transferred within three years to corresponding positions in the classified service under the several Executive Departments and independent government establishments without examination, subject to the other provisions of the civil-service rules.

THE WHITE HOUSE,

WM. H. TAFT.

February 1, 1913.

[No. 1705.]

2. To be entitled to the benefits conferred by this Executive Order, an employee must fulfill all of the following requirements, viz:

a. The employee must have worked for the Commission under one of its designations of trades that are covered by the generic term of "artisan." An artisan is defined to be a person who has been trained to manual dexterity in one of the recognized mechanical trades.

b. The employee must be a citizen of the United States.

c. The employee must have been in the service of the Isthmian Canal Commission on or subsequent to February 18, 1913.

d. The employee must have rendered one year's satisfactory service in the employment of the Commission on the Isthmus of Panama. Part of the one year's service may have been rendered prior to February 18, 1913.

e. The employee must have been discharged on account of "reduction of force" or "at his own request" (that is, by resignation) and not "for cause."

f. The employee must be specifically recommended for transfer to a corresponding position in the classified service under the several Executive Departments and independent government establishments in the United States.

3. When an employee is discharged who fulfills all of the above requirements, the head of the department or division in which he is employed will recommend, on his termination of service blank, form C. E. 171-1, whether or not the employee should be transferred to the classified service.

4. There should be ascertained from each such employee and entered on his termination of service blank, C. E. 171-1, the Executive Departments and government establishments to which he prefers to be transferred, in case the employee desires to express such preference.

5. An employee who is given the rating of "Indifferent" or "Poor" in general workmanship or of "Poor" in general conduct, or to whose reemployment objection is made, will not be recommended for transfer to the classified civil-service lists.

6. There will be entered, on the termination of service blank, form C. E. 171-1, for each employee recommended for transfer to the classified civil-service lists, the particular classes of work on which he has been engaged and on which he has shown special aptitude and competency, together with such other explanatory remarks as will give the Civil Service Commission full information in regard to the employee's qualifications.

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Sale of Furniture.

OFFICE OF THE CHIEF QUARTERMASTER,

CULEBRA, C. Z., April 7, 1913.

Sealed proposals will be received at this office until 3 p. m., Tuesday, April 22, 1913, for the purchase of any or all of a miscellaneous lot of second hand furniture now stored at the Lirio mill. Full information regarding the items for sale can be secured upon application to the district quartermaster at Culebra. Proposals should be accompanied by certified check,

money order, or cash, for five percentum (5%) of amount bid. Envelopes containing proposals should be marked "Proposals for furniture," and addressed to Gen. C. A. Devor, Chief Quartermaster, Culebra, C. Z.

Administrator's Notice.

In the Matter of the Estate of Leslie C. Cunningham—To any and all persons who may have a claim or claims, against the estate of Leslie C. Cunningham, deceased, who died at Pedro Miguel, Canal Zone, on January 31, 1913:

You will present the same on or before, the 15th day of October, 1913, to the undersigned Administrator of said estate, properly verified, or the same will be forever barred according to law.

TOM M. COOKE, Administrator.

Tug Service to Porto Bello and Toro Point.

Following is a schedule of Atlantic Division tugs in the service between Dock 13 and Porto Bello, and Dock 13 and Toro Point.

PORTO BELLO.

Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays—Leave Dock 13 at 5 p. m., arrive Porto Bello 10 p. m., returning leave Porto Bello 11 p. m., arrive Dock 13 at 3 a. m.

Saturdays—Leave Dock 13 at 9 a. m., arrive Porto Bello 11 a. m., returning, leave Porto Bello 3.45 p. m., arrive pier No. 4, Colon, 5.45 p. m.

Every Saturday—Leave Dock 13 at 6 p. m., arrive Porto Bello 11 p. m., returning, leave Porto Bello 12 midnight, arrive Dock 13 at 4 a. m.

Every Sunday—Leave Dock 13, 7 p. m. arrive Porto Bello 9 p. m., leave Porto Bello 9 p. m., arrive Dock 13, 11 p. m.

TORO POINT.

Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays. Sailing No. 1—Leave Dock 13 at 6.30 a. m., arrive Toro Point 7 a. m., returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. Sailing No. 2—Leave Dock 13 at 5 p. m., arrive Toro Point 5.30 p. m.

Special, Wednesdays, ONLY—Leave Dock 13 at 12 noon, arrive Toro Point 12.30 p. m., returning, leave Toro Point 12.30 p. m., arrive Dock 13 at 1 p. m.

Saturdays. Sailing No. 1—Leave Dock 13 at 6.30 a. m., arrive Toro Point 7 a. m., returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. Sailing No. 2—Leave Dock 13 at 5.00 p. m., arrive Toro Point 5.30 p. m. Leave Toro Point 5.30 p. m., arrive Dock 13 at 6 p. m.

Sundays. Sailing No. 1—Leave Dock 13 at 9.30 a. m., arrive Toro Point 10 a. m.; returning, leave Toro Point at 10.30 a. m., arrive Dock 13 at 11 a. m. Sailing No. 2—Leave Dock 13 at 4.30 p. m., arrive Toro Point 5 p. m., returning, leave Toro Point 5 p. m., arrive Dock 13 at 5.30 p. m.

Rainfall from April 1 to 12, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	.....	.....	.....
Balboa.....	.....	.....	.....
*Miraflores.....	.....	.....	.....
Pedro Miguel.....	.07	12	.07
Rio Grande.....	.06	12	.07
<i>Central Section—</i>			
Culebra.....	.02	3	.02
*Camacho.....	.....	.....	.....
Empire.....	.....	.....	.....
Gamboa.....	.05	3	.05
*Juan Mina.....	.04	1	.07
Alhajuela.....	.04	11	.04
*El Vigia.....	.03	3	.05
*Gorgona.....	.05	10	.08
*Frijoles.....	.06	3	.11
*Monte Lirio.....	.10	6	.14
<i>Atlantic Section—</i>			
Gatun.....	.06	5	.11
*Brazos Brook.....	.09	7	.34
Colon.....	.12	6	.21
Porto Bello.....	.02	5	↑.05

*Standard rain gage—readings at 5 p. m. daily Automatic rain gage at unstarred stations—values midnight to midnight. ↑To 5 p. m. April 11th.

Revenue Collections for March.

A statement of revenue collections other than postal collections for the month of March follows:

Bicycle, chauffeur and navigator licenses...	\$ 67.00
Motor vehicle licenses.....	109.00
Steamboat inspection.....	763.00
Insurance collections.....	14.70
Taxes, licenses, etc., (deputy collectors of revenues).....	13,186.96

NON-REVENUES.

Cash received from estates.....	3,563.60
Value of estates closed.....	1,332.08

Married.

JOHNSON-FORS—At St. Luke's Hospital Chapel, Ancon, C. Z., on April 9, Miss Emily Fors of Brooklyn, N. Y., to Mr. James A. Johnson of the same city, Chaplain H. A. Brown officiating. Residence, Brooklyn, N. Y.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning April 16, 1913:

FRESH MEATS.	Price.
Mutton—Stewing, per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire, forequarter (not trimmed, 10 pounds and over), per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Leg (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	17
Chops, per pound.....	26
Loin for roasting, per pound.....	26
Cutlets, per pound.....	30
Pork—Loin chops or roast, per pound.....	17
Pigs Head ½—6 lbs., 1—3 lbs., per pound.....	10
Beef—Suet, per pound.....	2
Stew, per pound.....	8
Plate, per pound.....	9
Corned, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds) per pound.....	18
Sirloin roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, Round, per pound.....	13
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds), per pound.....	20
Tenderloin (Western), per pound.....	30
Venison (Imported), Stew, per pound.....	6
Forequarter, (not under 6½ pounds), per pound.....	9
Rack (not under 5½ pounds) per pound.....	20
Saddle (not under 7½ lbs.), per pound.....	20
Leg (not under 9 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
MISCELLANEOUS.	
Livers—Beef, per pound.....	11
Calif, each.....	60
Half, each.....	30
Steak, Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	13
Frankfurter, per pound.....	13
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	120
Sausage—Meat, per pound.....	20
Sweetbreads—Beef, per pound.....	140
Eggs, fresh, dozen.....	24
one-half dozen only.....	12
Bluefish, per pound.....	15
Halibut, fresh, per pound.....	15
Salmon, per pound.....	12
Oysters, quarts, per keg.....	40
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds each.....	1.25
Fancy roasting, corn fed, about 4½ pounds each.....	1.00
Fowls, each.....	1.00
Ducks, (Wester, about 4½ pounds), each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	150
Rabbits, skinned, each.....	30
Ducks, blackhead, pair.....	60
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants, per pair.....	1.30
CURED AND PICKED MEATS.	
Ham—Sugar cured, per pound.....	20
Sliced, per pound.....	22
Half, for boiling, per pound.....	21
Boiled, per pound.....	28
Hocks, per pound.....	18
Beef, salt, family, per pound.....	12
Bacon—Breakfast, whole piece, per pound.....	25
Sliced, per pound.....	26
Ham, Lunch, per pound.....	32
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00

Pigs' feet, per pound.....	9
Tongues, per pound.....	18
DAIRY PRODUCTS.	
Butter—Creamery, special, per pound.....	41
Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Parmesan, per pound.....	35
Gouda, per pound.....	34
Milk (Certified), per bottle.....	**20
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	125
½-gallon.....	150
VEGETABLES AND FRUITS.	
Beets, per pound.....	3
Celery, per head.....	11
Cabbage, per pound.....	3
Cucumbers, per pound.....	*14
Carrots, per pound.....	3
Egg plants, each.....	10
Onions, per pound.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	2
Parsnips, per pound.....	3½
Parsley, bunch.....	3
Squash, per pound.....	14
Turnips, per pound.....	3
Lettuce.....	10
Tomatoes.....	7
Apples, per pound.....	5
Grape fruit, each.....	4
Lemons, dozen.....	24
Limes, per 100.....	80
Oranges, Jamaica, per dozen.....	12
Pineapples, each.....	12½

*Indicates reductions from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advances on last list.
‡Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock supply next lightest weight is supplied and refund note sent for difference.
§Sold only from commissaries; no orders take for delivery.

Misdirected Letters.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Agesitas, Bernard	McDaid, John A.
Barnes, William	MacDonald, Hugh
Barrat, J.	McDonald, J. H.
Batty, Miss C. E.	Murphy, P. M. (2)
Boucher, T. (pkg.)	O'Brien, Miss Madeline
Brothers, C. A.	Perky, J. C.
Butcher, Louis	Raiford, A. L. (paper)
Castro, B.	Reid, Mrs. James
Cherry, William	Robertson, Adolphus
Gallagher, John	Ross, Mrs. James
Gladis, Mike	Russell, S. M.
Gray, Mr.	Russell, Mrs. S. M.
Hale, J. T.	Schoehleber, Alvin W.
Harper, M. C. A.	Seavey, Miss Ruth A.
Hinds, E. Garfield	Sewell, Geo. (pkg.)
Hoffner, Herbert	Stone, Harvey
Jennings, William P.	Terry, Charles
Josephs, Albert H.	Thompson, Dr. J. R.
Julian, S. W.	Turner, Frederick, H.
Kingston, Mrs. C. J.	Ward, Mrs. Alida
Langlois, Mrs. M. (pkg.)	Watson, J.
Malherin, Daniel	West, Bailey A.
Matthews, Merville	White, C. J.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending April 26, 1913. (75th meridian time):

DATE.	Low.	High	Low	High	Low
April 20.....	A.M.	A.M.	A.M.	P.M.	P.M.
April 21.....	3.02	9.11	3.20	9.37	
April 22.....	3.49	9.57	4.03	10.21	
April 23.....	4.32	10.42	4.45	11.05	
		5.15	11.25	5.27	11.48
April 24.....		5.58	12.09	6.10	
April 25.....	12.33	6.43	12.55	6.54	
April 26.....	1.20	7.30	1.44	7.42	

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, April 12, 1913. All heights are in feet above mean sealevel.

DAY AND DATE	Vigia.	Alhajuela	Gamboa.	Catun Lake.
Sun., April 6.....	125.5	91.5	48.7	48.6
Mon., April 7.....	125.6	91.6	48.7	48.6
Tues., April 8.....	125.6	91.6	48.6	48.6
Wed., April 9.....	125.5	91.4	48.7	48.6
Thurs., April 10.....	125.4	91.4	48.7	48.7
Fri., April 11.....	125.4	91.4	48.7	48.7
Sat., April 12.....	125.4	91.4	48.8	48.7
Height of low water to nearest foot.....	125.0	91.0	44.0	

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Colon.....	P. R. R.	Saturday	Apr. 12
Advance.....	P. R. R.	Saturday	Apr. 19
Panama.....	P. R. R.	Friday	Apr. 25
Allianca.....	P. R. R.	Thursday	May 1
Colon.....	P. R. R.	Wednesday	May 7
Advance.....	P. R. R.	Tuesday	May 13
Panama.....	P. R. R.	Tuesday	May 20
Allianca.....	P. R. R.	Monday	May 26

CRISTOBAL TO NEW YORK.

Allianca.....	P. R. R.	Friday	Apr. 18
Colon.....	P. R. R.	Thursday	Apr. 24
Advance.....	P. R. R.	Thursday	May 1
Panama.....	P. R. R.	Wednesday	May 7
Allianca.....	P. R. R.	Tuesday	May 13
Colon.....	P. R. R.	Monday	May 19
Advance.....	P. R. R.	Monday	May 26
Panama.....	P. R. R.	Sunday	June 1
Allianca.....	P. R. R.	Saturday	June 7

NEW YORK TO COLON.

Almirante.....	U. F. C.	Wednesday	April 9
Thames.....	R. M.	Saturday	April 12
Carrillo.....	U. F. C.	Saturday	April 12
Prinz Joachim.....	H.-A.	Saturday	April 12
Santa Marta.....	U. F. C.	Wednesday	April 16
Carl Schurz.....	H.-A.	Saturday	April 19
Pastores.....	U. F. C.	Saturday	April 19
Metapan.....	U. F. C.	Wednesday	April 23
Trent.....	R. M.	Saturday	April 26
Prinz August Wilhelm.....	H.-A.	Saturday	April 26
Zacapa.....	U. F. C.	Wednesday	April 30
Emil L. Boas.....	H.-A.	Saturday	May 3
Sixaola.....	U. F. C.	Saturday	May 3
Almirante.....	U. F. C.	Wednesday	May 7
Prinz Joachim.....	H.-A.	Saturday	May 10
Carrillo.....	U. F. C.	Saturday	May 10
Magdalena.....	R. M.	Saturday	May 10

COLON TO NEW YORK.

Zacapa.....	U. F. C.	Thursday	April 17
Sixaola.....	U. F. C.	Tuesday	April 22
Emil L. Boas.....	H.-A.	Wednesday	April 23
Almirante.....	U. F. C.	Thursday	April 24
Magdalena.....	R. M.	Tuesday	April 29
Prinz Joachim.....	H.-A.	Tuesday	April 29
Santa Marta.....	U. F. C.	Thursday	May 1
Pastores.....	U. F. C.	Tuesday	May 6
Carl Schurz.....	H.-A.	Wednesday	May 7
Metapan.....	U. F. C.	Thursday	May 8
Tagus.....	R. M.	Tuesday	May 13
Tivives.....	U. F. C.	Tuesday	May 13

NEW ORLEANS TO COLON.

Atenas.....	U. F. C.	Saturday	April 12
Parismina.....	U. F. C.	Wednesday	April 16
Turrialba.....	U. F. C.	Saturday	April 19
Cartago.....	U. F. C.	Wednesday	April 23
Abangarez.....	U. F. C.	Saturday	April 26
Heredia.....	U. F. C.	Wednesday	April 30
Atenas.....	U. F. C.	Saturday	May 3

COLON TO NEW ORLEANS.

Abangarez.....	U. F. C.	Thursday	April 17
Heredia.....	U. F. C.	Saturday	April 19
Atenas.....	U. F. C.	Thursday	April 24
Parismina.....	U. F. C.	Saturday	April 26
Turrialba.....	U. F. C.	Thursday	May 1
Cartago.....	U. F. C.	Saturday	May 3

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

Hamburg-American steamers for New York via Kingston and Santiago de Cuba, sail thus: The *Carl Schurz* and the *Emil L. Boas* on alternate Wednesdays at 10 a. m., and the *Prinz Joachim* and the *Prinz August Wilhelm* on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays, at 3 p. m. ships for New York via Kingston, on Tuesdays, at 10 a. m. and Thursdays at 10 a. m.; for Bocas del Toro on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct, Tuesdays at 3 p. m.

The following ships arrived at, or departed from the port of Balboa during the week ending April 12, 1913:

Arrivals—April 7, *Manitro*, from Valparaiso; April 9, *Palena*, from Valparaiso; April 10, *San Jose*, from San Francisco.

Departures—April 7, *Guatemala*, to Guayaquil; April 7, *Quito*, to Guayaquil; April 6, *Ucayali*, to Valparaiso; April 10, *Ecuador*, to Guayaquil; April 10, *City of Sydney*, to San Francisco; April 7, *Santa Rita*, to San Francisco; April 12, *Arica*, to San Francisco and intermediate points.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, APRIL 23, 1913.

No. 35.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission to the Secretary of War for the month of March is published in full in this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Consolidation of Timekeeping Force.

Effective April 1, the timekeeping office of the Atlantic Division was consolidated with the central timekeeping office of the Department of Examination of Accounts at Culebra. The transfer of the office force, including all of the 10 employees, with one exception, and of the timekeeping records, took place on April 10. The central timekeeping office now has a force of 42 gold employees, and the time and pay rolls for the Chief Engineer's office, the Second, Fifth, and Sixth Divisions of the Chief Engineer's office, the Atlantic Division, the Department of Sanitation, and the Department of Civil Administration are prepared there. In addition, there are district timekeepers, one each at Gatun, Porto Bello, Cristobal drydock, and Balboa, who are charged with the issuing of commissary and hotel books, and other duties, and who report to the Culebra office. The Central and Mechanical Divisions and the Subsistence Department continue to maintain their own timekeeping forces.

Transfer of Gorgona Employees Begun.

The transfer of gold bachelor employees from Gorgona to Empire and Cristobal is in progress, and it has been decided that the Gorgona transfers are to take precedence over those from other districts. The removal of the car repair work from Gorgona shops to Empire on May 1 will necessitate quartering approximately 30 additional gold bachelors in the Empire district. As there are only nine Type 5 houses in that district, it will be necessary, until the demand for quarters has lessened, to assign three men to a room, as has been the

practice in Type 5 houses in other districts. There has been a decrease on the gold roll at Gatun of 69 employees, which has afforded relief to the situation at that point. At the Pacific end, however, quarters are congested, particularly the silver quarters.

New Developments of Slide of February 5.

The large mass of broken rock on the east side of the Canal, opposite Culebra, included in the original break of February 5, 1913, took its third movement downward and laterally on the night of April 16, heaving up the bottom of the Canal in much the same way as on the two previous occasions, and destroying four tracks, all of which had been destroyed on each of the two previous occasions. A single track only, on the extreme west side of the Cut, was left in commission. A second one has since been relaid, and on the afternoon of April 17, two tracks on the west side of the Cut were in commission.

The slide involved no new material, but was simply a repetition of what took place at the time of the original break, which action will probably be repeated several times in the future before the height of the broken bank and the volume of the material involved in it are so reduced as to prevent further heaving of the bottom.

Steamshovels on 12-Hour Shift.

Nine steamshovels are now working on a 12-hour shift in the Culebra Cut section, four having been added, on Monday, April 14, to the five previously at work. Five steamshovels on this schedule are excavating in the Cucaracha slide, two have been set at work in the new movement of the break on the east bank, north of Gold Hill, which developed on February 5, and the remaining two are engaged in terracing the bank back from the edge of this break. The longer day of the steamshovels necessitates a corresponding lengthening of the schedule for the work trains which serve the nine shovels, and these do not stop work now until 6.30 at night. The object of the extra shift was to make additional headway in the removal of the slide material.

Dumping of Culebra Cut Spoil.

The dumping of material removed by the Culebra Cut steamshovels now includes the Naos Island breakwater, the Balboa dump, the Ancon-Sosa fill, inclusive of the area near the baseball park; the Balboa Wye fill, the sanitary fill south of the Miraflores power house, the fill on the Panama railroad relocation embankment between Miraflores and Pedro Miguel, the backfill at Pedro Miguel Lock, the Culebra swamp dump, the Gold Hill, or Cotton Tree dump, on the east bank of the Canal and Nos. 1, 4, 5, and 7 dumps off the Panama railroad relocation north of Gamboa. Dumping for the Ancon-Corozal wagon road embankment fill was completed

last week. Operations have entirely ceased on the Miraflores dump, and the tracks over the area have been torn up. At the present time no material is carried north farther than the dumps on the relocation north of Gamboa. More material is being wasted on these dumps at present than at any other one locality, the number of trainloads on April 19 being 43, which was an average day. On the same date, 12 trainloads were dumped on the Naos Island breakwater; 43 on the fills at Balboa and around Sosa and Ancon Hills; one south of the Miraflores power house; nine, between Miraflores and Pedro Miguel; one on the Pedro Miguel Lock backfill; 17 on the dump at West Culebra, and 17 at Cotton Tree dump. The number of trainloads dumped on April 19 was 148, with a total of 50,098 cubic yards of material. This number of trainloads is sometimes more, and again it is less.

Manufacture of Roofing at Paraiso.

The American Cement Tile Manufacturing Company has a force of seven white Americans and 38 negroes engaged at Paraiso in the manufacture of roofing tile for the terminal buildings at Balboa. About one-eighth of the quantity has been completed and is in storage. A test was recently made for the purpose of determining the breaking load and strength per square foot, and the results show that the tile is well above the stipulations of the contract with the company.

New Drainage Ditch Between Empire and Culebra.

A steamshovel was set at work this week excavating a drainage ditch on the west bank of the Canal, beginning at a point near the old Lirio planing mill, thence parallel to the Cut to El Cerro, where it will turn and continue back of the Empire incinerator until it connects with the open drain that serves the village of Empire. Before the fill at West Culebra was begun, the surface water from the area to be served by the ditch drained into the nearby swamp and ran out from it gradually. With the filling of almost the entire area covered by the swamp, the water is now pent up in a comparatively small space, and will rush through its only outlet during heavy rains in such volume as to endanger the solidity of the bank between the present drainage ditch and the Canal. The new ditch will involve a cut about 18 feet in depth.

To Remove Shoal in Limon Bay.

A shoal in Limon Bay, west of the Atlantic entrance, and on a line west and a little north of Cristobal Point, will be removed by Atlantic Division dredges within the next few months. The shoal covers an area of approximately one-half of a square mile, and will be dredged to a depth of not less than 30 feet below mean sealevel, involving the excavation of about 346,000 cubic yards. In addition to the shoal, two hummocks that exist in the bottom of

NOTES OF PROGRESS.

(Continued.)

the harbor near the entrance to the Canal prism will be removed.

Arrangements have also been made to take soundings in that part of the bay, lying between the Toro Point breakwater and the 30-foot contour, west of the Canal entrance, in order that the 30- and 35-foot contours referred to mean sealevel may be accurately located and plotted, and to make certain that in the area between the 30- and 35-foot contours there are no depths less than 30 feet, and no hummocks projecting above the level of the surrounding bottom. In the same way

soundings will be taken of the bottom of the bay between the 35-foot contour and the breakwater, in order to ascertain if there is a uniform depth of 35 feet. The soundings will probably be accomplished by the drag method.

Lieut.-Col. William V. Judson has been appointed chairman of the Board of Local Inspectors, effective April 25, vice Mr. W. G. Comber, resigned.

Mr. Daniel J. Waters has been appointed vice and deputy consul general of the United States at Panama, vice Mr. Caspar L. Drcier, transferred to Bangkok, Siam.

PERSONAL.

Brig.-Gen. C. A. Devol, accompanied by Mrs. Devol, sailed on the *Allianca*, on Friday, April 18, on his annual leave of absence.

Col. W. C. Gorgas sails on the *Parismina* for New Orleans, on Saturday, April 26, on his annual leave of absence. Mrs. Gorgas will leave for New York on the next sailing of the *Ancon* from Colon.

Col. John L. Phillips, accompanied by his family, returned on Monday, April 21, on the *Ancon*, from his annual leave of absence.

Lieut.-Col. Charles F. Mason returned from vacation leave on the *Ancon*, which docked at Cristobal on April 21.

Maj. Henry A. Brown, chaplain at St. Luke's, Ancon, sails on the *Colon*, on Thursday, April 24, on his annual leave of absence.

Dr. A. J. Orenstein, who resigned his position as Assistant Chief Sanitary Inspector, sailed for New York on the *Allianca* on Friday, April 18. From New York he goes to Hamburg, Germany, to enter the Colonial Institute in that city, with the view of later entering the German Colonial Service in Africa. He entered the Canal service on November 6, 1905, was stationed for a time at Colon and Ancon Hospitals, later was appointed district physician at Ancon, and Assistant Chief Sanitary Inspector in May, 1911.

The building at Culebra, occupied by the dispensary, will be dismantled on account of steamshovel operations on the west bank of the Cut. The old motor house will be fitted up for use as a dispensary.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the two weeks ending April 19:

DATE.	Hours worked.	Cubic yards.
April 7.....	7.25	1,908
April 8.....	4.50	1,844
April 9.....	5.50	2,214
April 10.....	7.10	2,202
April 11.....	6.20	1,994
April 12.....	7.40	2,440
Total.....	39.15	12,602
April 14.....	6.35	1,970
April 15.....	4.10	1,688
April 16.....	6.40	1,954
April 17.....	4.45	1,949
April 18.....	5.00	1,776
April 19.....	5.55	1,775
Total.....	33.05	11,112

CONCRETE WORK IN THE LOCKS AND SPILLWAYS.

About 99 per cent of the entire quantity of concrete to be placed in the locks and spillways had been laid at the close of work on April 19, the amount in place being 4,433,803 cubic yards.

GATUN LOCKS AND SPILLWAY.

About 98 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on April 19, being 2,017,167 cubic yards, out of a total of 2,043,730. In the spillway of Gatun Dam there had been placed 224,687 cubic yards out of a total of 225,000 cubic yards. A statement of the amount placed each working day of the week ending April 19, and of the total, follows:

DATE.	CONSTRUCTION PLANT 2-cubic yard mixers.				Large stone.	Total.	SPILLWAY.				
	Concrete placed.	Hours worked.	No o mixer				Concrete laid	Hour worked	No. mixers used		
	Cu. Yds.				Cu. Yds	Cu. Yds.	Cu. Yds.				
April 14.....	634	10.56	2		634	75	5.00		1		
April 15.....	630	10.50	2		630	53	4.00		1		
April 16.....	690	11.50	2		690	17	.75		1		
April 17.....	762	12.70	2		762	68	4.00		2		
April 18.....	450	7.50	2		450	70	4.75		1		
April 19.....	490	8.16	2		490	151	7.25		1		
Total.....	3,656	60.92	2		3,656	434	25.75		1.1		
Previously reported.....					2,013,511	22	253				
Grand total.....					2,017,167	224	587				

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 919,690 cubic yards, having been placed at the close of work on April 19. The record for each working day of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed	Hours worked.	No. of mixer.	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.
April 14				20	2.00	1			20
April 15				5	.50	1			5
April 16				95	9.00	1			95
April 17				67	8.00	1			67
April 18									
April 19									
Total				187	19.50	.67			187
Previously reported.....								4.493	919,503
Grand total								4.493	919,690

MIRAFLORES LOCKS AND SPILLWAY.

Over 99 per cent of the concrete for the system of three twin locks at Miraflores was in place on April 19, the total amount on that date being 1,494,540 cubic yards, bucket measurement, out of a total of approximately 1,499,800. The record for each day worked last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. ½-cubic yard mixers.			Mixed by hand.	Large stone.	Total.	SPILLWAY.						Total.	
										CONSTRUCTION PLANT. 2-cubic yard mixers			AUXILIARY PLANT. ½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers				Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	See time under locks.		Cu. Yds.			Cu. Yds.	
April 14.....	382	14.33	6	27	4.00	1			409	112			133	8.00	2	245	
April 15.....	172	11.67	6	52	8.00	1	10		234	264			102	7.00	1	366	
April 16.....	704	19.83	6	63	9.00	1	5		772	48						48	
April 17.....	416	15.92	6	94	11.00	2			510	50						50	
April 18.....	512	11.00	6	86	10.25	2			598	122			80	4.50	1	202	
April 19.....	36	15.00	6	76	9.00	1			432	120			130	7.00	1	250	
Total.....	2,542	87.75	6	398	51.25	1.33	15		2,955	716			445	26.50	.83	1,161	
Previously reported.....								3,693	1,491,585							23,086	
Grand total.....								3,693	1,494,540							24,247	

CANAL MEDAL LIST.

On the following list are the names of American employees of the Isthmian Canal Commission, who have completed two years of continuous service on the Isthmus during the twelve months ending December 31, 1912, and are in consequence entitled to receive a Canal medal. The date shown opposite each name is that from which medal service is computed.

The list is published in order that it may be carefully checked by those interested. Any omissions, errors in spelling of names, or in the dates from which service is reckoned, should be promptly reported to the Office of the Chairman for correction.

A continuation of the medal list, together with a list covering employees of the Panama railroad, as well as the bar lists for both I. C. C. and P. R. R. employees, will appear in later issues.

Heads of divisions are requested to carefully check their lists of American employees on the silver roll, and to report any omissions on the medal or bar lists to this office.

Name.	Date.	Name.	Date.	Name.	Date.	Name.	Date.	Name.	Date.
1910.									
Ball, Leo R.....	Jan. 1	Brown, Henry A.....	Feb. 10	Turley, Frank.....	Mar. 16	Scullen, Edward F.....	Apr. 18	Brookbank, James H.....	May 31
Wrightson, William D.....	Jan. 1	Crafts, Lorenzo H.....	Feb. 10	Ellman, Louis C.....	Mar. 17	Thomas, Hugh M.....	Apr. 18	Claherty, Peter J.....	May 31
Butler, Edward D.....	Jan. 3	Hollin, Alexander.....	Feb. 10	Richardson, James A.....	Mar. 17	Voris, Anthony.....	Apr. 18	Gummerson, Mary E.....	May 31
McLeod, Minnie M.....	Jan. 3	Natt, Oscar.....	Feb. 10	Ellman, Louis W.....	Mar. 18	Cousins, William, Jr.....	Apr. 19	Martin, Frank C.....	May 31
Northcutt, Katharine.....	Jan. 3	Curtis, Joe.....	Feb. 11	Hibben, James H.....	Mar. 18	Jamison, John B.....	Apr. 19	Nichel, John.....	May 31
Bates, Mildred O.....	Jan. 4	Mills, Frank.....	Feb. 11	Fogleman, Edgar L.....	Mar. 19	James, William H.....	Apr. 21	Norris, Grace B.....	May 31
Justice, Alonzo A.....	Jan. 4	Walsh, William H.....	Feb. 11	Holsien, Wilfred I., Jr.....	Mar. 19	McNeil, Allie H.....	Apr. 21	Young, Elizabeth.....	May 31
Campbell, Robert L.....	Jan. 5	Weaver, Edward R.....	Feb. 11	Hutley, Clyde W.....	Mar. 19	Woodward, M. Eliza-		DeBarrows, Daniel.....	June 1
Geyer, John H.....	Jan. 6	Rees, Thomas.....	Feb. 12	Rogers, George E.....	Mar. 19	beth.....	Apr. 21	Hinant, Geraldus A.....	June 1
Mueller, Charles.....	Jan. 6	Wolson, George H.....	Feb. 12	Turner, Edward S.....	Mar. 19	Forristal, William F.....	Apr. 22	Krenz, Herman.....	June 1
Goodrich, Jesse B.....	Jan. 7	Klemmer, Joseph A.....	Feb. 14	O'borne, John P.....	Mar. 21	Moraga, Frank A. S.....	Apr. 22	Mosher, Roy S.....	June 1
Kundall, John C.....	Jan. 8	Koperski, Leon A.....	Feb. 14	Parker, Charles J.....	Mar. 21	Carter, Edward H.....	Apr. 24	Bushey, Lucy M.....	June 2
Flynn, Andrew.....	Jan. 10	Lipzinski, John S.....	Feb. 14	Pond, John W.....	Mar. 21	Kitts, Joseph A.....	Apr. 24	McNulty, Louis F.....	June 2
Pfeiffer, Rudolph.....	Jan. 10	Farrell, Richard S.....	Feb. 15	Cash, James R.....	Mar. 22	McCormick, Edward J.....	Apr. 24	Rudd, Edward W.....	June 2
Purtell, John J.....	Jan. 10	Hillan, Francis P.....	Feb. 15	Fleaharty, David Z.....	Mar. 22	Wagner, Charles B.....	Apr. 24	Wiestling, John G.....	June 2
Tuley, Willard P.....	Jan. 10	Grojean, Eugene E.....	Feb. 16	Marshall, Edward L.....	Mar. 22	Graves, William D.....	Apr. 25	McDonald, Neil C.....	June 4
Wilson, Arthur.....	Jan. 10	Helsel, Oscar W.....	Feb. 16	Clark, Lee M.....	Mar. 24	Koch, Sigurd O.....	Apr. 27	Peters, John A.....	June 4
Alker, James.....	Jan. 11	Hopkins, Jess T.....	Feb. 16	Dobie, Jean W.....	Mar. 24	Snider, Lyman E.....	Apr. 27	Baldou, Bruno.....	June 6
Bronson, William F.....	Jan. 11	Kirkpatrick, Ralph Z.....	Feb. 16	Johnson, James J.....	Mar. 24	Stoll, Henry A.....	Apr. 28	Briand, Alphonse J.....	June 6
Baillie, George S.....	Jan. 12	Pearson, Harry M.....	Feb. 16	Kershaw, John B.....	Mar. 24	Shearer, Ella J.....	Apr. 30	Deyo, Harry L.....	June 6
Cook, Oscar.....	Jan. 12	Pitcher, Bert D.....	Feb. 16	Lamont, John, Jr.....	Mar. 24	Knapp, Guthrie E.....	May 1	Feeley, Joseph M.....	June 6
Stevenson, Amaziah D.....	Jan. 12	Ralston, Lester D.....	Feb. 16	McDonald, Thomas A.....	Mar. 24	Lynch, Thomas J.....	May 1	Grammen, Maurice.....	June 6
Boggs, Max R.....	Jan. 13	Warr, Walter H.....	Feb. 16	Phelps, Verna M.....	Mar. 24	Smith, Caroline E.....	May 1	Humburg, William.....	June 6
Smith, Cash C.....	Jan. 13	Woodworth, Harry A.....	Feb. 16	Shea, Dennis L.....	Mar. 24	Hamlin, Adison E.....	May 2	Jackson, Walter.....	June 6
Harvey, Walter S.....	Jan. 15	Zirkle, John J.....	Feb. 16	Wiedemann, Charles G.....	Mar. 24	Davis, Mahlon H.....	May 3	Lichty, Theodore.....	June 6
Hersh, Walter L.....	Jan. 15	Barton, George F.....	Feb. 17	Daniels, Helen S.....	Mar. 28	Burford, Earl.....	May 4	Noonan, Rosemund.....	June 6
Cooper, Fred W.....	Jan. 16	Hager, John A.....	Feb. 17	Elmes, Byron C.....	Mar. 28	Sullivan, Thomas A.....	May 4	Norton, Tobias.....	June 6
Jones, Francis D.....	Jan. 16	Reinoehl, John K.....	Feb. 18	Renshaw, Robert H., Jr.....	Mar. 28	Bradberry, Herbert T.....	May 5	Smith, Charles W.....	June 6
Kent, George D.....	Jan. 16	Stewart, Robert D.....	Feb. 18	Wilson, Roger A.....	Mar. 29	Coll, Charles A.....	May 7	Webb, W. Wilkes.....	June 6
Kett, David.....	Jan. 16	Myers, Samuel C.....	Feb. 19	Eldridge, Dora.....	Mar. 30	Einemann, Frederick.....	May 7	Tomlinson, Howard.....	June 8
Kuckuck, Gus.....	Jan. 16	Brennan, Roy P.....	Feb. 21	Humphrey, Louis L.....	Mar. 30	Kellam, Maria L.....	May 7	Hall, Henry W.....	June 9
Rook, Albert F.....	Jan. 16	Clary, John E.....	Feb. 21	Lewis, Mary C.....	Mar. 30	Menkens, Bernhard.....	May 7	O'Meara, Chester V.....	June 9
Wang, Frank H.....	Jan. 16	Fitzgerald, George C.....	Feb. 21	McGowan, Edwin R.....	Mar. 30	Morris, Harry.....	May 7	Porter, Fred W.....	June 9
Ward, George B.....	Jan. 16	Wilson, Otis.....	Feb. 23	MacNelly, Charles J.....	Mar. 30	Miller, John C.....	May 9	Salinas, Victor.....	June 9
Buck, Charles C.....	Jan. 17	Bluewell, James G.....	Feb. 24	Morris, Wilbur H.....	Mar. 30	Moore, David H.....	May 9	Bull, Freeman N.....	June 11
Garnett, Russell.....	Jan. 18	Dewey, Cadwell.....	Feb. 24	Smith, Milton A.....	Mar. 30	Bello, Giovanni.....	May 10	Davenport, William H.....	June 11
Van Dame, Walter F.....	Jan. 19	Dugan, Walter C.....	Feb. 24	Traver, Harry O.....	Mar. 30	Morgan, George W.....	May 10	Lenow, Francis J.....	June 11
Adams, W. Ormiston.....	Jan. 20	Gorman, John C.....	Feb. 24	Friton, Emily.....	Mar. 30	Talty, Thomas L.....	May 10	Trowbridge, Lafayette.....	June 11
Aubrey, Adelyn H.....	Jan. 20	Jackson, William K.....	Feb. 24	Giavelli, Norman D.....	Apr. 1	Hurst, T. H.....	May 12	Gerlach, Bertha C.....	June 12
Croscup, Stephen D.....	Jan. 20	Larsen, James.....	Feb. 24	Irwin, Joseph C., Jr.....	Apr. 1	Acors, John.....	May 13	Hansen, Olof P.....	June 12
Elmore, Charles M.....	Jan. 20	Fisher, Arthur J.....	Feb. 25	McGonigle, George.....	Apr. 1	Bartow, Alvin M.....	May 13	Hilbun, Edna L.....	June 12
Smith, Daniel W.....	Jan. 20	Markley, George S.....	Feb. 25	Campbell, Thomas J.....	Apr. 2	Burrell, William E.....	May 13	Hammer, Theron V.....	June 13
Smith, Edward.....	Jan. 20	Cameron, John.....	Mar. 1	Chelf, Asher M.....	Apr. 2	Hayes, Guy C.....	May 13	Ward, Raymond B.....	June 13
White, Clyde E.....	Jan. 20	Fretz, Adolf.....	Mar. 1	Skahill, Patrick.....	Apr. 2	Hockenberry, Charles		Evans, Charles H.....	June 14
Adams, Dan.....	Jan. 21	Hvid, Carl P.....	Mar. 1	Thompson, Clark G.....	Apr. 2	P.....	May 13	Runyon, Edwin E.....	June 14
LeSassier, Charles.....	Jan. 21	Larrabee, Ralph P.....	Mar. 1	Campbell, Gilbert.....	Apr. 4	Levy, William V.....	May 13	Graham, George T.....	June 15
Watts, Joe W.....	Jan. 21	McWilliamson, Geo. E.....	Mar. 1	Parkis, James A.....	Apr. 4	McCooy, Felix.....	May 13	Baxter, George A.....	June 16
Bottenfield, Martin C.....	Jan. 22	Putnam, Edward A.....	Mar. 1	Hanson, Charles A.....	Apr. 5	Patterson, Bartely.....	May 13	Egan, William A.....	June 16
Nellis, A. A.....	Jan. 23	Sammetingor, Jerome M.....	Mar. 1	Beaudrie, John T.....	Apr. 6	Thatcher, Maurice H.....	May 13	Everson, Hans.....	June 16
Beattie, Donald S.....	Jan. 24	Schaefer, August A.....	Mar. 1	Foster, John.....	Apr. 6	Bartmes, Max B.....	May 16	Mauget, John.....	June 16
Harris, John D.....	Jan. 26	Scherer, Revillo M.....	Mar. 1	Geer, William H.....	Apr. 6	Porter, Harry W.....	May 16	White, Marion R.....	June 16
Herrod, William L.....	Jan. 26	Weling, Leo.....	Mar. 2	Hatten, Frank W.....	Apr. 6	Vessels, Martha W.....	May 17	Anderson, Wm. F., Jr.....	June 17
Bartholomew, Herbert.....	Jan. 26	Hollick, Claud.....	Mar. 3	King, Sam.....	Apr. 6	Wood, George C.....	May 17	Souder, Harry L.....	June 17
Cramer, Fay S.....	Jan. 27	McConaghy, Benjamin		Underwood, Edwin H.....	Apr. 6	Abramson, John.....	May 18	Conkerton, Charles.....	June 18
Reed, Frank O.....	Jan. 27	D.....	Mar. 3	Veale, Edgar R.....	Apr. 6	Anderson, Norman C.....	May 18	Critchlow, Howard T.....	June 18
Rosenthal, George I.....	Jan. 27	Vaughan, William H.....	Mar. 3	Wallace, Frederic J.....	Apr. 6	De Merse, Rose M.....	May 18	Hart, Claude D.....	June 18
Briston, Joseph J.....	Jan. 28	Gorchow, Frank J.....	Mar. 4	Harris, Judson I.....	Apr. 7	Duval, William F.....	May 18	Hoecker, George.....	June 18
Harris, Thos. M., Jr.....	Jan. 29	Woodard, Leonard P.....	Mar. 4	Fisher, Arthur W.....	Apr. 8	Moore, Elmer R.....	May 18	McCann, Will R.....	June 18
Percy, Elmer C.....	Jan. 29	Evans, Robert.....	Mar. 5	Atwater, William H., Jr.....	Apr. 8	Queripel, James.....	May 18	Weston, G. K.....	June 18
Settlemire, William N.....	Jan. 29	Molen, Walter H.....	Mar. 5	English, James C.....	Apr. 9	Wellwood, John.....	May 18	Deason, Lucius H.....	June 19
Lockhart, Charlie P.....	Feb. 1	Wood, Harold.....	Mar. 5	Caven, Earl S.....	Apr. 12	Bray, Walter.....	May 19	Drury, George F.....	June 19
Marr, Harry.....	Feb. 1	Bowles, James T. B.....	Mar. 7	Carter, Robert H.....	Apr. 13	Hartson, Frank J.....	May 19	Dunham, Alfred G.....	June 19
Lee, Henry D.....	Feb. 2	Mayhew, F. O.....	Mar. 7	Fay, John.....	Apr. 13	Tucker, Samuel H.....	May 19	Kiely, Richard.....	June 19
O'Kane, William.....	Feb. 2	Zacharias, Albert L.....	Mar. 7	Hartsough, George H.....	Apr. 13	Uderitz, William J.....	May 20	McCarthy, Jerome F.....	June 19
Alligood, John.....	Feb. 3	Williams, William R.....	Mar. 8	Heckman, Walter L.....	Apr. 13	Wescoatt, Edward A.....	May 23	Vivian, Charles E.....	June 19
Colberg, Carl G.....	Feb. 3	Feuille, Frank.....	Mar. 10	Null, Martin W.....	Apr. 13	Baker, William H.....	May 24	Weber, Charles C.....	June 19
Currier, Frederick R.....	Feb. 3	Smith, Clarence F.....	Mar. 10	Pruner, Fred K.....	Apr. 13	Baschore, Albert.....	May 24	Janney, Phillip H.....	June 20
Fyffe, J. P.....	Feb. 3	Thweatt, Robert P.....	Mar. 11	Root, John.....	Apr. 13	Boyle, Condy J.....	May 24	Kosier, Thomas R.....	June 20
Kornfeld, Karl.....	Feb. 3	McCauley, Albert P.....	Mar. 12	Thompson, David.....	Apr. 13	Foth, Benjamin G.....	May 24	Edwall, Theodore M.....	June 21
Myers, Harry M.....	Feb. 3	Towne, Harry E.....	Mar. 12	Tyson, Grover L.....	Apr. 13	Fox, Max S.....	May 24	Werner, Otto A.....	June 21
Regan, Ralph H.....	Feb. 3	Watts, Allan.....	Mar. 12	Verner, Samuel P.....	Apr. 13	Hess, Fred A.....	May 24	Jarvis, Frank N.....	June 23
Schreiber, Andrew N.....	Feb. 3	Wilson, Lloyd F.....	Mar. 12	Watson, Burl.....	Apr. 13	Jecko, Joseph O.....	May 24	Troje, Oscar R.....	June 23
Wood, George W.....	Feb. 3	Bell, Wm. H.....	Mar. 13	Wheeler, W. S.....	Apr. 13	Kallay, Paul G.....	May 24	White, Dennis P.....	June 23
Bornefeld, Julius H.....	Feb. 4	Brooke, Mortimer L.....	Mar. 13	White, Edward C.....	Apr. 13	Luttrell, Joseph T.....	May 24	McCray, Henry A.....	June 24
St. Clair, Albert.....	Feb. 4	Christopher, Abram.....	Mar. 13	Bean, John P.....	Apr. 14	Page, Sada A.....	May 24	Oettil, Charles.....	June 24
Carcaud, Stephen.....	Feb. 7	Emmet, Eugene.....	Mar. 13	Nicholls, Mary P.....	Apr. 14	Kelly, Michael A.....	May 26	Phillips, Albert J.....	June 24
Shailer, Philip R.....	Feb. 7	Howard, Eugene T.....	Mar. 13	Seymour, James D.....	Apr. 14	Siedlecky, Wicenty.....	May 26	De Lange, William.....	June 25
Cook, James E.....	Feb. 9	Miller, Fred L.....	Mar. 13	Sherief, Henry E.....	Apr. 17	Townsend, Frank H.....	May 26	Milgram, Nikola V.....	June 25
Cornelson, Alexander C.....	Feb. 9	Yomey, William N.....	Mar. 13	Brown, George W.....	Apr. 18	Olsen, Andrew.....	May 27	O'Mara, William.....	June 25
Dunn, Martin J.....	Feb. 9	Hunter, Mary L.....	Mar. 14	Clarenbach, Albert A.....	Apr. 18	Tilley, Joseph F.....	May 27	Conroy, Joseph T.....	June 27
Gabriel, John A.....	Feb. 9	Kirk, Robert W.....	Mar. 14	Cleveland, George F.....	Apr. 18	Elmgren, F. Oscar.....	May 28	Dickson, Tracy C.....	June 27
Neas, John H.....	Feb. 9	Conaghan, James F.....	Mar. 15	Dickson, Alfred B.....	Apr. 18	Cameron, Alexander J.....	May 29	Harfield, Benjamin G.....	June 27
Reinhold, Ernest M.....	Feb. 9	Creary, Jack A.....	Mar. 15	Lithgow, Richard P.....	Apr. 18	Arens, Hugo.....	May 31	Koperski, Raymond.....	June 27
		Mooradian, Sahag.....	Mar. 15	Olmsted, Herbert K.....	Apr. 18	Bendzen, Christian.....	May 31		

(To be continued.)

DOORS FOR LOCK TUNNELS.

Award Made for 99-Details of their Construction.

Award has been made to the Mesker Iron Company of St. Louis for the manufacture of 99 steel doors, complete, to close all entrances to the operating tunnels of the locks. The contract price is \$4,398 and delivery is promised in 60 days.

The doors are to be rectangular in form,

the numbers placed on the keys. The hinges, pins, and gudgeons are to be of steel; the hinge part will be fastened to the gudgeon and riveted in, and not of the loose-pin type.

The doors are to be fitted with brass locks, consisting of a large locking bolt in the horizontal plane, made of steel, which will be opened or closed by a T handle, also of steel. Each lock will have two flat keys of Yale

all members of a powder gang engaged in blasting in that part of the Canal prism, south of Miraflores Locks, enclosed between two earth dikes, the south one of which serves as a barrier against the open water channel to the sea. The gang numbered 30 men in all, 27 of whom were powdermen. The explosion occurred about 15 or 20 minutes after the men had finished loading the drill holes, and the most of them were in a body to one side of the danger zone waiting for the order to make the final connections. The switch box from which the blasts are shot off is situated on an elevation on the east bank of the Canal, about 300 yards from the scene of the explosion, and it had not been opened. There was only one key to the box, and it was in the pocket of the subforeman who was killed. Mr. Richard Roberts, the foreman in charge, had left his field office for the site of operations to give final directions preparatory to setting off the blast, when he stopped to speak to one of his men. It was at this moment that the explosion occurred. The material in which the dynamite was planted was mostly mud and hard clay; had it been rock, which constitutes a large part of the excavation in this section, the mortality would probably have been much greater. The drill holes were 92 in number, and were bored to a depth of 30 feet, and, owing to the fact that the locality is below sealevel, there was about 25 feet of water in each hole over each charge. All the charges were set off. The cause of the explosion has not been established.

Obituary.

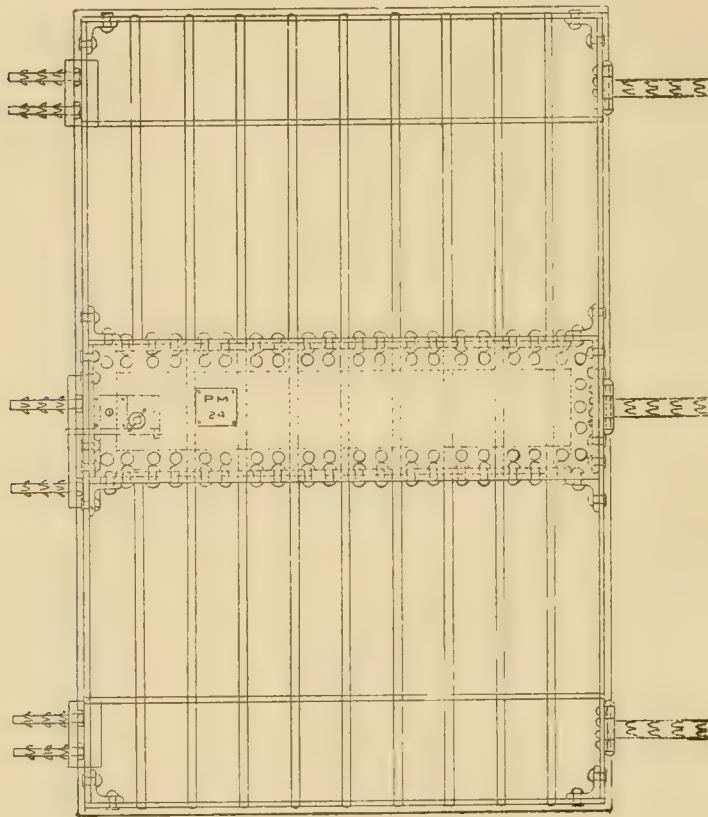
Charles M. Swinehart, a general foreman in the employ of the Central Division, was killed on Friday, April 18, while working at the bottom of the Cut, near Station 1670, Empire. He was assisting in connecting a section of pipe when a large rock rolled down the side of the Cut from the 95-foot level and struck him on the head, fracturing his skull. He entered the Canal service in April, 1905, was 32 years of age, and unmarried. His home before coming to the Isthmus was at Berlin, Wis. His mother, Mrs. Deceta Swinehart, lives at Las Cascadas.

Olaf W. Johnson, naturalized American, died at Colon Hospital on Friday, April 18. He was a carpenter in the employ of the Atlantic Division, residing at Gatun, and first entered the Canal service on September 23, 1905, reentering it in 1909. He was a native of Sweden, 34 years of age, and unmarried. A sister, Mrs. Aaron Lawson, lives at No. 295 Pearl street, Providence, R. I.

W. E. Hall, American, nonemployee, residing at Cristobal, died at Colon Hospital on April 2. He was 34 years of age, and unmarried. He was in the Canal service at one time, and had been on the Isthmus about two years and a half. His mother, Mrs. S. J. Hall, lives at Grenada, Miss.

Harry Modin, naturalized American, employed on dredge No. 85 at Balboa, died at Colon Hospital on Monday, April 21. He was a native of Sweden, was 40 years of age, and had been on the Isthmus 11 years, entering the Canal service in August, 1908. He is survived by his wife, Mrs. Hilda Modin, and daughter, four and one-half years old, residing at Gatun.

Mr. D. S. Webster has been appointed consul for the kingdom of Norway in the city of Colon.



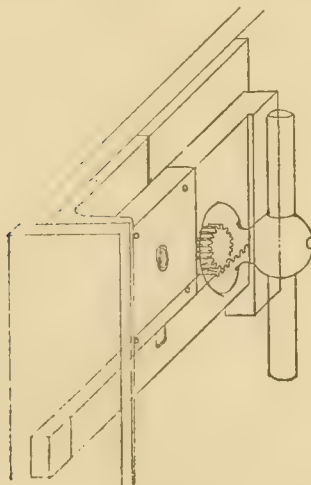
FRONT ELEVATION OF DOOR TO OPERATING TUNNEL.

constructed of open hearth structural steel, galvanized, and equipped with the necessary keys, stops, gudgeons, and hinges. All holes are to be drilled and locks and hinges

type, and the locks are to have 14 master keys, six for Gatun Locks, which will open all of the 44 doors; four for the 24 doors at Pedro Miguel Lock, and four for the 31 doors at Miraflores Locks. All of the 99 locks are to be different as to individual keys, and each key will have an initial stamped on it, as "G" for Gatun, "P. M." for Pedro Miguel, etc. Two of the doors at Gatun Locks will be 41 inches wide and 71 inches long; all the others will be 47 inches wide and 71 inches long. They will be installed by the Commission forces.

Premature Explosion of Dynamite.

Three men were killed and 19 more or less seriously injured in a premature explosion of 21,050 pounds of 60 per cent dynamite in the Canal prism, opposite Corozal, at about 1.55 p. m., on Saturday, April 19. No Americans were among the victims. The dead are: Frederick Dunning, subforeman, Antigua; Edward Blake, Jamaican; Gaston Victor, Martiniquan. Of the injured, seven were from Barbados, three from Antigua, one from Jamaica, four from St. Vincent, two from Montserrat, one from St. Kitts, and one from Cuba. Two men are still missing, and although a crew of laborers has been at work digging over the ground on and near the site of the explosion, no trace of them had been found up to Tuesday night. The men were



LOCK FOR DOOR

properly attached. Each door will be marked with a brass name plate; for example, "Gatun No. 1, etc.," "Pedro Miguel No. 1, etc." The numbers used will correspond with

CANAL WORK IN MARCH.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., April 16, 1913.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of March, 1913:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the construction divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	2d Div.	5th Div.	6th Div.	Total.
Work excavation, dry..	Cubic yds...	35,705	1,183,900	51,387	395,500		1,666,492
Work excavation, wet..	Cubic yds...	380,243		*166,800		379,845	926,888
Total work excavation	Cubic yds...	415,948	1,183,900	218,187	395,500	379,845	2,593,380
Plant excavation, dry..	Cubic yds...			3,949	5,700		9,649
Plant excavation, wet..	Cubic yds...	22,809					22,809
Total plant excavation	Cubic yds...	22,809		3,949	5,700		32,458
Total Canal excavation	Cubic yds...	438,757	1,183,900	222,136	401,200	379,845	2,625,838
Material placed in dams	Cubic yds...	96,101			45,800		141,901
Concrete placed, locks, dams and spillways..	Cubic yds...	51,465			47,304		98,769
Explosives used.....	Tons (Gross)	48.48	145.64	11.96	57.12	19.00	282.20
Rock drilled.....	Feet.....	22,012	339,566	12,698	99,972	12,460	486,708
Tracks removed.....	Miles.....		9.00	2.67			11.67
New tracks laid.....	Miles.....	3.10	20.53	3.75	2.50		29.88
Rock crushed.....	Cubic yds.				65,743		65,743
Cement used.....	Barrels.....	42,531	77	3,956	38,592	14	85,170
New roads built.....	Miles.....				.58		.58
Water mains laid.....	Feet.....	9,009	600		3,110		12,719
Sewers laid.....	Feet.....	400	558		269		1,227
Open drains and ditches dug.....	Feet.....	38,051	382	900			39,333
Average daily force.....		5,069	6,752	1,183	6,434		19,438
Average rainfall.....	Inches.....	.90	.25				0.33

*Accomplished by 5th division for the 2d division

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the division engineer of the Atlantic Division, the resident engineer of the Fifth Division and the erection subdivision of this office. The inspection of this work is being cared for by the masonry and lock structures subdivision. This subdivision is also charged with general inspection of masonry work of all the locks.

INSPECTION OF INSTALLATION OF RISING STEM GATE VALVES, ERECTION OF SPILLWAY GATES AND CAISSONS, AND ASSEMBLY OF HYDRO-ELECTRIC DRAFT TUBES AT GATUN.

Work was continued on the erection of the eight spillway gates at Miraflores, and was about 90 per cent completed at the close of the month.

Work on the preparation of rising stem gate valve machinery chambers was continued at Gatun, Pedro Miguel, and Miraflores; at the end of the month it was about 95 per cent completed at Gatun, 85 per cent completed at Pedro Miguel and 35 per cent completed at Miraflores.

Inspection of the assembly and riveting of draft tubes for the Gatun hydroelectric station was continued.

LOCK GATES AND PROTECTIVE DEVICES.

All material for the 92 leaves has been completed and shipped, except the nickel steel bearing plates for 10 leaves. Practically

all structural material for the spare parts has been riveted and shipped; the bearing plates, bolts, and a large part of the castings for the spare parts remain unfinished. Shipments of spare parts during the month totaled 611 tons. Erection, reaming, and riveting were prosecuted at a high rate of speed and the finishing of the leaves progressed satisfactorily. The riveting at Gatun and Pedro Miguel is so far advanced that it will not delay the completion of the gates. The status of the work in the several locks may be summarized as follows:

Gatun—Work was in progress on all the leaves, 40 in number; erection, 86 per cent completed; reaming, 93 per cent completed;

riveting, 82 per cent completed; finishing, 20 per cent completed.

Pedro Miguel—Work was in progress on the entire 24 leaves; erection, 82 per cent completed; reaming, 94 per cent completed; riveting, 84 per cent completed.

Miraflores—Work was in progress on all of the 28 leaves; erection, 64 per cent completed; reaming, 54 per cent completed; riveting, 35 per cent completed.

LOCK GATE RECESS COVERS.

Except the movable parts at the quoin end of the recesses, the status of the work remained the same as at the close of the previous month. The contractors now engaged in coating the interior of the lock gates have entered into an agreement to thoroughly clean and coat with bitumastic enamel all parts below the coping not imbedded in concrete, and the work on this painting has just begun.

CHAIN FENDERS.

The field work consisted of a practical test of the first chain fender—812-813. All parts of the apparatus functioned satisfactorily. It was found, however, that there is some liability to the collection of air in the piping, which made it desirable to raise the tanks in these two pits and also to arrange the piping in the remaining chain fenders, so that the lower level of the water in the tanks will always be higher than any part of the piping. Tests were also made to determine whether the resistance valves will function properly in service and also to decide between the Ross and the Mueller valves; but these tests are still incomplete.

INSPECTION AND ERECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

Reduction of the inspection force continued. The contractors are still behindhand, but progress is being made in the rates of delivery. The following tabulations summarize the work:

RISING STEM GATE VALVES.

	Gatun—56		Pedro Miguel—24	
	Assembled.	Placed.	Assembled.	Placed.
During mo.				
To date....	46	52	22	22
Miraflores—36				
	Assembled.		Placed.	
During month.....			11	
To date.....			18	

FIXED IRONS AND TRACKS, RISING STEM AND GUARD VALVES.

	Gatun—124		Pedro Miguel—60	
	Milled or Ground.		Milled or Ground.	
During mo.				
To date....	120		2	48
Miraflores—84				
			Milled or Ground.	
During month.....			18	
To date.....			36	

GUARD VALVES.

	Gatun—6		Pedro Miguel—6	
	Assembled.	Placed.	Assembled.	Placed.
During mo.				
To date....	6			
Miraflores—6.				
			Assembled.	
During month.....				
To date.....				

RISING STEM GATE VALVE MACHINES.

	Gatun—56		
	Received.	Partially installed.	Installed.
During month.....			
To date....	56	11	43
Pedro Miguel—24			
	Received.	Partially installed.	Installed.
During month...			
To date....	24		22
Miraflores—36			
	Received.	Partially installed.	Installed.
During month.....	12	2	
To date....	35	14	

RACK TRACK.

(In one-foot units.)

	Gatun—21,945 feet.			
	Dist.	Track laid.	Frozen.	Completed.
During month.	1,030	900	402	486
To date.....	19,768	19,638	16,540	16,267
Pedro Miguel—13,213 feet.				
	Dist.	Track laid.	Frozen.	Completed.
During month.	115	115	281	185
To date.....	10,587	10,587	9,350	8,750
Miraflores—19,031 feet.				
	Dist.	Track laid.	Frozen.	Completed.
During month..	2,930	2,621	372	322
To date.....	6,382	5,495	542	340

CYRINDRICAL VALVE MACHINES.

Gatun—60			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	60	1	59

Pedro Miguel—20.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	20		20

Miraflres—40.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	40	20	20

MITER GATE MOVING MACHINES.

Gatun—40.			
	Received.	Partially installed.	Installed.
During month.....	4	4	1
To date.....	26	35	6

Pedro Miguel—24.			
	Received.	Partially installed.	Installed.
During month.....		1	
To date.....	24	24	2

Miraflres—28.			
	Received.	Partially installed.	Installed.
During month.....	8	2	
To date.....	8	18	

AUXILIARY CULVERT VALVE MACHINES.

Gatun—4.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	4		4

Pedro Miguel—4.			
	Received.	Partially installed.	Installed.
During month.....			4
To date.....	4		4

Miraflres—4.			
	Received.	Partially installed.	Installed.
During month.....		1	
To date.....	4	3	

MITER FORCING MACHINES.

Gatun—20.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	1		1

Pedro Miguel—12.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

Miraflres—14.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

SPILLWAY GATE MACHINES.

Gatun—14.			
	Received.	Partially installed.	Installed.
During month.....			1
To date.....	14	3	*1

Miraflres—8.

	Received.	Partially installed.	Installed.
During month.....			
To date.....	8		

*Except gate seat babbitted.

MITER GATE RECESS COVERS.

Gatun—36.			
	Placed.	Frozen.	Completed.
During month.....		3	4
To date.....	36	31	30

Pedro Miguel—20.			
	Placed.	Frozen.	Completed.
During month.....			
To date.....	20	20	

Miraflres—24.			
	Placed.	Frozen.	Completed.
During month.....		2	
To date.....	20	2	

ELECTRICAL WORK—ATLANTIC LOCKS.

Conductor rails, insulators, brackets, and cover plates were installed on 2,462 feet of straight track, making a total of 25,468 feet. Of this, 11,346 feet have been equipped with steel conductor bar and 14,122 feet with copper conductor bar. Two thousand eight hundred and sixty-eight feet of cable were pulled to the end of the month. In connection with the installation of the different classes of machines, the following electrical work was performed:

Cylindrical valve machines—Motor connected on 59; limit switch installed on 55, and connections made on 14; indicator switch installed on 58, and connection made on 14; all contact panels installed.

Auxiliary culvert valve machines—Motor connected on two; limit switch installed on four, and connection made on two; contact panel installed on four.

Rising stem valve machines—Motor connected on four; limit switch installed on 43, and connection made on 15; contact panels installed on 43, and connection made on 15; contact panels installed on 30.

Miter gate moving machines—Limit and commutating switches installed on 19; contact panel installed on 21.

Handrail operating machines—Controller and contact panel installed on 21.

Electrical work was started in one transformer room.

The service tests started in February on sample towing locomotive No. 640 were continued during the month and 16,610 trips were made. The load was increased from 11,000 pounds to 14,000 pounds, 3,320 trips being made with the latter load.

Spillway gate machine No. 13 was tested, raising and lowering the spillway gate, and operated satisfactorily.

Test was made of handrail machine No. 35, with temporary control, and the operation of same was, in general, satisfactory.

On March 31, the erection of the penstocks for the hydroelectric station was about 90 per cent completed; water turbines Nos. 2 and 3 had been erected, and No. 1 partially erected; all turbogenerator subfoundations were in place; the erection of all turbogenerators was approximately 24 per cent completed.

ELECTRICAL WORK—PACIFIC LOCKS.

Conductor rails, insulators, brackets, and copper plates were installed on 1,426 feet of track, making a total of 12,903 feet. Of this amount, 6,002 feet have been equipped with

steel and 6,901 feet with copper conductor rail. There were 2,880 feet of fibre conduit installed during the month, making a total of 19,042 feet. This entire amount, together with 97,461 feet of vitrified tile conduit, has been rodded, cleaned, and made ready for the reception of cable. At the close of the month, 48,987 feet of cable had been pulled into the conduit system. The following electrical work was performed during the month in connection with the installation of the different classes of machines:

Cylindrical valve machines—Limit switch and contact panel installed on 20. The entire 20 operated satisfactorily.

Auxiliary culvert machines—Limit switch and contact panel installed on four.

Rising stem valve machines—Limit switch installed on 22; contact panel installed on 18. Six of these machines were tested.

Miter gate moving machines—Motor connected to two; contact panel installed on eight.

Miraflres—Steel conductor bar, insulator brackets, and plates were installed on 2,000 feet of track. There were 28,811 feet of duct rodded, cleaned and wired. Satisfactory tests were made on 20 cylindrical valve machines. Experiments on the waterproofing of tunnels continued during the month.

EMERGENCY DAMS.

Inspection was in progress at five localities in the United States, and 1,125 tons of material were accepted. At the end of the month, 13,572 tons had been fabricated and accepted. There were only about 10 tons of material delivered on the Isthmus during the month; approximately 1,114 tons were erected. On March 31, a total of 8,642 tons had been delivered and 5,202 tons erected. There was no receipt of material during the month; about 40 per cent of that on the ground had been erected at the close of the month. Work was in progress on the east and west dams at Gatun and the east and west dams at Pedro Miguel.

AIDS TO NAVIGATION.

There was one steel lantern door hung and one circular stairway completed on range towers of the Atlantic and Pacific type. The rust scale was scraped from and cement wash applied to the reinforcing bars of the caisson for the west breakwater light. Two concrete steel reference targets 20 feet high were completely erected. In the vicinity of San Pablo and Tabernilla about 28 acres of Canal prism were cleared of trees. Work was also in progress finishing range No. 2, Gatun Lake section, erecting and painting metal lantern stairways in range towers No. 1, Gatun Lake section, and Nos. 5 and 6, Atlantic Division; assembling six gas buoys, chains and sinkers, and placing gas buoys on station at the Pacific entrance to the Canal.

Second Division—Office of the Chief Engineer.

BALBOA TERMINALS.

The following work was accomplished during the month:

EXCAVATION.	Cu. Yds.
Preparing site.....	18,264
Drydock No. 1.....	28,421
Shops.....	4,815
Pier No. 1.....	2,595
Quay Wall.....	1,241
Total.....	55,336

FILLING AND EMBANKMENT.

Preparing site.....	33,384
Backfill (shop foundations).....	712
Dikes.....	4,556
Sand line.....	120
P. R. R. temporary coal pockets.....	300
Sixth Division drainage ditch.....	4,140
Fifth Division.....	840
Atlantic Division.....	12,320
Total.....	56,462

CONCRETE PLACED.

Caissons.....	1,531
Shop foundations.....	1,173
Total.....	2,704

There were 200,745 pounds of steel reinforcing placed, 12,698 lineal feet of rock drilled, 26,805 pounds of dynamite used. Work was continued on the quay wall.

The American Cement Tile Manufacturing Company, which has been awarded the contract for the tile to be used on the roofs of the permanent shops at Balboa, made, at Paraiso, 6,600 standard tile, 500 glass tile, 600 standard half tile and 500 ridge rolls. Samples of these tiles were tested to destruction and, although thinner than those tested by the Bureau of Standards, each sustained a load far in excess of the specified requirements.

METEOROLOGY AND HYDROGRAPHY.

The usual observations and measurements were made and taken.

Fifth Division—Office of the Chief Engineer

DISTRICT NO. 1, LOCKS, DAMS, AND DRY EXCAVATION.

Excavation—The total excavation amounted to 401,200 cubic yards, of which 264,100 cubic yards were classified as rock, and 137,100 cubic yards as earth.

Filling and Embankment—Two thousand cubic yards of dry filling were added to the prism of the west dam at Pedro Miguel, increasing the total amount in place to 692,878 cubic yards. The backfill at Pedro Miguel was increased by 51,400 cubic yards, the total quantity in place at the close of the month being 905,636 cubic yards. At Miraflores, the dry filling in the toes of the west dam was increased by 43,800 cubic yards, making the total quantities of dry and hydraulic filling in place at the end of the month 1,619,414 and 661,048 cubic yards, respectively. The backfill at Miraflores was increased by 99,000 cubic yards, the total quantity in place at the close of the month being 1,355,547 cubic yards.

Pedro Miguel Locks—Concrete work consisted of the construction of the south guide wall extension, miscellaneous finishing and trimming. Installation of the buffer springs in the guide walls was commenced. The total amount of concrete laid was 4,793 cubic yards, placed as follows: Two hundred and ninety-nine cubic yards in the walls, 49 cubic yards in the floors, and 4,445 cubic yards in the south approach wall.

OPERATION OF THE AUXILIARY CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours).....	8.00
Average number of hours per day worked laying concrete, actual time worked.....	8.23
Average number of mixers per day.....	2.08
Average hourly output per mixer, actual time, (cubic yards).....	11.33
Concrete laid (cubic yards).....	4,850.00

The above total includes 24 cubic yards placed for the American Bridge Company, 25 cubic yards for the United States Steel Products Company, and eight cubic yards for the Central Division drainage. The plant consisted of three $\frac{1}{2}$ -cubic yard mixers, the output of which was either discharged by mixers directly into forms, or handled to forms by Decauville equipment.

Miraflores Locks—The concrete work for the locks consisted of the completing of the south guide wall, the laying of concrete in

the southwest wall and floor of the lower west chamber, northwest wing wall, operating tunnels, and in the manufacturing of concrete lamp posts. The total amount of concrete laid was 20,208 cubic yards, placed as follows: Ten thousand eight hundred and seventy-eight cubic yards in the walls, 2,962 cubic yards in the floors, 5,422 cubic yards in the south approach wall, 430 cubic yards in the northeast core wall and 516 cubic yards placed for the First Division. Fixed irons, aggregating 215,263 pounds, were placed in the masonry.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant	Auxiliary Plant
Length of working day (hours).....	8.00	8.00
Average number of hours per day worked laying concrete, actual time.....	3.12	7.03
Average number of mixers per day.....	7.00	3.44
Average hourly output per mixer actual working time (cubic yards).....	34.92	14.31
Average amount of concrete laid per hour per berm of chamber crane, actual working time (cubic yards).....	44.73	

Concrete laid (cubic yards)..... 13,534.00 19,452.00

The above totals include 12,432 cubic yards laid in the Miraflores spillway, 136 cubic yards in the sump pump discharge, and 210 cubic yards for the McClintic-Marshall Construction Company. The auxiliary plant consists of a daily average of 7.03 $\frac{1}{2}$ -cubic yard mixers, the output of which was discharged directly into forms, or placed by derricks and locomotive cranes. The permanent plant consisted of four berm and four chamber cranes.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

Reservoirs, water mains, sewers, and oil pipelines were maintained and extended as required to facilitate construction work.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER.

Length of working days (hours).....	12.00
Average number of hours per day, actual working time.....	9.40
Average number of cubic yards crushed per hour per working day.....	219.14
Average number of cubic yards crushed per working hour.....	279.75
Total output for the month (cubic yards).....	65,743.00

Sixth Division—Office of the Chief Engineer.

The following is a statement of the output of the seven dredges which were in operation during the month:

DREDGE.	Type.	WORK.			PLANT.		Total.	Remarks.
		Earth.	Clay.	Rock.	Earth.	Rock.		
		Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	
Badger.....	Ladder.....	4,722	18,495	16,133			39,350	Place measurement
Cardenas.....	Dipper.....		450	8,700			9,150	Snow measurement
Corozal.....	Ladder.....	21,194	53,610	49,870			124,674	Place measurement
Culebra.....	Suction.....	176,054			5,935		181,989	Snow measurement
Marmot.....	Ladder.....		17,200	191			17,391	Place measurement
Mole.....	Ladder.....	1,550	4,083	7,593			13,226	Snow measurement
No. 85.....	Suction.....				160,865		160,865	Place measurement
Total.....		203,520	93,838	82,487	166,800		546,645	

CHAMÉ SAND EXCAVATION.

Approximately 33,660 cubic yards of sand were excavated at Punta Chamé and delivered to the Balboa sand bins.

BALBOA SHOPS.

The manufacturing and repair work in the shops and shipways was satisfactorily performed during the month.

Atlantic Division.

GATUN LOCKS.

Excavation—There were 39,975 cubic yards excavated during the month. Of this amount, 2,569 cubic yards were removed from the lock site in the preparation of foundations for the north approach walls; the remainder was

taken from the borrow pit and Canal prism for the backfill and construction tracks.

Backfill—There were 40,972 cubic yards of backfilling placed during the month. The total amount placed to April 1, was 2,050,468 cubic yards. On that date the work was 98.91 per cent completed.

Receiving and issuing material—The issues of rock for the month amounted to 29,327 cubic yards. There were 10,883 cubic yards of sand dredged from the pool north of the spillway and added to the storage pile; 15,148 cubic yards of sand were issued. Cement receipts totaled 42,040 $\frac{1}{2}$ barrels and the issues amounted to 38,261 $\frac{1}{2}$ barrels.

Mixing and placing plants—Mixer No. 1 and the portable mixers were kept in satisfactory operation throughout the month.

Concrete work—A total of 34,928 cubic yards of concrete was laid, distributed as follows: Upper lock, 47 cubic yards; middle lock, 28 $\frac{1}{2}$ cubic yards; lower lock 34,852 $\frac{1}{2}$ cubic yards.

On March 31, the locks concrete work was 98.01 per cent completed.

OPERATION OF CONCRETE CONSTRUCTION PLANT.

Length of working day (hours).....	9.00
Average number of actual working hours per day per strand of cableway, laying concrete.....	5.84
Average number of mixers per day.....	4.00
Average hourly output per mixer, actual working time (cubic yards).....	59.95
Average amount of concrete laid per actual working hour, per strand of cable (cubic yards).....	29.75
Concrete laid (cu. yds.) cableways.....	34,736
Concrete laid (cu. yds.) portable mixers.....	127
Concrete laid (cu. yds.) hand mixed.....	309

Total amount of concrete laid (cu. yds.)..... 35,172.00

GATUN DAM.

Construction during the month increased the total fill, as determined by car measurement, 113,377 cubic yards, making the total amount in place 21,439,754 cubic yards. On April 1, the dam was 97.4 per cent completed.

Hydraulic fill—There was no increase made in the hydraulic fill, the total in place remaining at 10,124,082 cubic yards.

Dry fill—There were added to the dry fill 96,101 cubic yards of material removed by steamshovels; this was placed on the north

and south toes of the dam, east and west of the spillway, making the total dry fill in place 11,278,500 cubic yards.

GATUN SPILLWAY

Concrete—A total of 2,659 cubic yards of concrete was laid during the month. A revised estimate of the amount of concrete required to finish the spillway dam shows that on April 1st 7,506 cubic yards remained to be placed, exclusive of 1,200 cubic yards in the penstock head wall estimated for under the hydroelectric plant, and exclusive of 1,000 cubic yards for paving the terrepain along the side walls of the spillway, covered by a special estimate. Concrete work for the spillway is 96.7 per cent completed.

HYDROELECTRIC PLANT.

During the month 89 cubic yards of rock were removed by hand in the preparation of foundations, making a total excavation of 98,080 cubic yards. There were 626 cubic yards of concrete placed, making a total of 1,789 cubic yards.

HARBOR AND CHANNEL SECTION.

*Dredging—From the ocean to Gatun Locks—*Seven dredges removed 329,077 cubic yards of earth and 51,166 cubic yards of rock from the Canal prism. In addition, the dredge *Caribbean* removed 93,646 cubic yards of earth from the Cristobal approach channel; dredge No. 4 removed 104,940 cubic yards of earth from the slip at Panama Railroad Company's pier No. 17, and 7,671 cubic yards of earth from between piers 16 and 17, as well as 22,809 cubic yards of earth from the French canal. On March 31, forty feet of water could be carried from zero to zero plus 2,100 feet, 35 feet to mile post 4 plus 3,000 feet, 30 feet to mile post 4 plus 3,600 feet, 20 feet to mile post 6 plus 2,350 feet, and 10 feet to mile post 6 plus 2,800 feet. The *Terrier* drilled 3,008 feet, used 30,460 pounds of dynamite and shot 29,129 cubic yards of rock to minus 45 feet mean sealevel.

*West breakwater, Colon—*There were 19,321 cubic yards of Porto Bello rock unloaded, of which 12,108 cubic yards were handled by cranes and 7,213 cubic yards by the derrick barges, making the total amount unloaded to April 1st 189,927 cubic yards.

MUNICIPAL ENGINEERING.

*New Colon waterworks—*In the sedimentation basin there were 2,100 cubic yards of material excavated, 1,600 lineal feet of 20-inch pipe underdrain laid, and fifty-five 30-foot concrete piles driven. The backfill around the walls of the clear water basin was completed to elevation 11; the columns supporting the filter beds were constructed; the floor of the pipe gallery and the walls of the main building to elevation 16 were completed. The forms for the walls of the pump station, up to and including the eaves, were made ready for concrete.

The reservoirs, water mains, sewers, roads and oil pipe lines were maintained and extended as required to facilitate construction work.

Central Division.

The total amount of material excavated during the month was 1,183,900 cubic yards, of which 259,571 cubic yards were classified as earth, and 924,329 cubic yards as rock. The entire amount was removed by steamshovels and all of it was primary excavation in the Canal prism.

The daily average number of steamshovels at work was 38.52 and the total number of shovel days was 963, as compared with 38.8 shovels at work and 892.5 shovel days in February. For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table is presented:

Period	Excavated by shovels.	Classification of material		Av. No. of shovels at work	W'kg days	Av. yards per shovel day.
		Rock.	Earth.			
1912	Cu. Yds.	Cu. Yds.	Cu. Yds.			C. P.
Mar ..	1,702,125	1,335,061	347,064	46.27	26	1,414.90
1913:						
Mar ..	1,183,900	924,329	259,571	38.52	25	1,229.00

Rainfall at Empire: 1912, .01 ins.; 1913, .22 ins.

The above table shows the average output

to be 13.14 per cent less in March, 1913, than in the corresponding month of 1912.

The total amount of material excavated from Culebra Cut in March, 1913—1,183,900 cubic yards—is the lowest record in that section for the month of March since 1907; in March of that year 815,270 cubic yards were removed.

The estimated amount of dry material removed and to be removed, according to the revision of February 1, 1913, is 111,751,472 cubic yards. Up to April 1, 1913, 104,232,172 cubic yards had been removed, leaving 7,519,300 cubic yards to be removed in order to complete all dry excavation in this division. At the close of the month 93.27 per cent of all dry excavation was completed. On March 31, the status of the work in the sections which compose this division was as follows:

	CULEBRA CUT.	Cu. Yds.
Completed	91,847,517	
To be completed	7,519,300	

CHAGRES SECTION.

Dry excavation completed	12,384,655
Wet excavation still to be accomplished	300,000

There were furnished during the month to the Panama Railroad Company, for the Cristobal mole, 13,566 cubic yards of stone, the total amount furnished to March 31 for this purpose being 225,665 cubic yards.

There were 60,455 cubic yards of material dumped from the Naos Island trestle, making a total of 1,283,535 cubic yards.

The daily average number of laborers employed was 6,173, while the average number of gold men working was 579.

Quartermaster's Department.

*Labor—*The force report of March 26 showed 39,089 men actually working for the Commission and the Panama Railroad Company. The actual working forces of the several contractors totaled 5,644 men. Throughout the whole period of the Canal's construction, this is the largest number of men actually working at one time. The supply of unskilled labor is now equal to the demand.

*Buildings—*The radio station at Balboa was completed. Gamboa engine shed was removed to a point on the east side of the Canal, nearly opposite Empire, and its reerection partly completed. The erection of two type 5 quarters at Corozal was completed. At the close of the month there were in course of reerection at the latter point, one Quartermaster's storehouse removed from Bas Obispo, as well as three type 5, one type 14, and two type 1 quarters, all removed from Gorgona.

*Quarters—*Arrangements were made to transfer all married employes at Gorgona to other districts as rapidly as quarters can be provided for them and, until all these families are taken care of, there will be no new assignments made to married quarters in the Culebra, Empire, Las Cascadas Bas Obispo and Cristobal districts. It is proposed to move the Gorgona bachelors to Cristobal and Empire in the very near future. A decrease of 69 gold bachelors at Gatun has some what relieved the situation in that district. Increase in the work at Balboa has resulted in a large movement of laborers to that district and, as a result, silver quarters there are congested.

*Material and supplies—*The value of material received was \$940,277.57. This material came forward in 38 steamers, the total weight of cargo, exclusive of lumber, piling and ties, being 26,434 tons.

Subsistence Department.

The Tivoli Hotel showed a net profit of

\$18,826.74. The operation of the line hotels, European laborers' messes, colored laborers' kitchens, restaurants, tugs and dredges returned a net profit of \$2,000.64. The total net profit on subsistence operations during the month was \$20,827.38.

Department of Civil Administration.

COURTS.

*Courts—*During the month two civil and two criminal cases were disposed of in the Supreme Court, 21 civil and 40 criminal cases in the Circuit Courts, and 65 civil and 538 criminal cases in the District Courts.

POSTS, CUSTOMS, AND REVENUES.

Money order sales amounted to \$406,233.51, and the fees to \$1,955.63. Receipts from stamps and card sales and newspaper postage aggregated \$9,693.52. The total collection of revenues made by the division was \$25,790.41, and the collections on account of court fines, costs and fees \$3,103.85. A total of \$141,335.00 was deposited in postals saving accounts and a total of \$97,101.00 was withdrawn. At the port of Ancon, 22 vessels entered and 23 cleared; at the port of Cristobal, 32 entered and 31 cleared.

POLICE AND PRISONS.

The total number of persons arrested was 551, of whom 505 were men and 46 women. Twenty-four nations, or forty-two separate states and dependencies, were represented. There were 16 convicts committed to the penitentiary and 18 were discharged, leaving 117 convicts in confinement at the close of the month. The cost of guarding and subsisting these prisoners was \$2,218.09, and the value of the work performed by them on the roads of the Canal Zone was \$2,032.80.

FIRE PROTECTION.

There were 55 fires reported in the Canal Zone. The total damage occasioned by these fires was \$646.80.

PUBLIC WORKS.

In the city of Panama the daily average consumption of water was 1,973,800 gallons, and in Colon 1,258,506 gallons. The usual inspection and maintenance work was performed.

SCHOOLS.

The net enrollment in the white schools was 1,334, the average number of pupils belonging was 1,104.3, and the average daily attendance 1,034.4. In the colored schools the net enrollment was 1,470, the average number belonging was 1,004.9, and the average daily attendance 819.3. At the close of the month there were employed in the white schools 46 teachers, and in the colored schools 31 teachers, the total being one less than at the close of the preceding month.

Department of Sanitation.

The total number of deaths from all causes among employes was 32, divided as follows: From disease 19, and from violence 13, giving an annual average per thousand of 4.05 and 2.77, respectively. The annual death rate per thousand among employes for the month of March, 1912, was 8.45.

The annual average death rate per thousand in the Canal Zone and in the cities of Colon and Panama, including both employes and nonemployes, was 19.32. This rate is based upon a population in the Canal Zone of 62,810 according to the census of February, 1912, and populations in Colon and Panama, respectively of 20,232 and 47,172 as estimated

by the Department of Sanitation. The annual average death rate per thousand among the same classes of population for the month of March, 1912, was 14.67.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was: Whites 2.79, blacks 4.43, giving a general average for disease of 4.05. For the same month during 1911 the annual average death rate per thousand from disease among whites was 3.88, blacks 7.76, giving a general average of 6.76; and for the same month during 1912, whites 2.75, blacks 7.9, giving a general average of 6.57.

Among employes, deaths from the principal diseases were as follows: Duodenal ulcer, two; lobar pneumonia, three; tuberculosis, seven; ulcer of the stomach, one, leaving six deaths from all other diseases and 13 deaths from external violence.

No case of yellow fever, smallpox, or plague originated on or was brought to the Isthmus during the month.

Respectfully,

GEO. W. GOETHALS,

Chairman and Chief Engineer.

SOCIAL LIFE OF THE ZONE.

Orphan Asylum Dedication.

On Wednesday afternoon, April 16, the building of the new orphan asylum at Colon, was dedicated, the office being performed by the parish priest, the Rev. Father Volk, in the presence of about 100 people, friends of the Sisters of Charity, and members of kindred orders from Panama. The procession of priests, Christian Brothers, children of the school, and inmates of the asylum, and the sisters, made a tour of the balconies, the brothers chanting the service. A short history of the undertaking was given, and benediction was pronounced. Refreshments were served in the refectory. The sisters have removed from their old quarters into the new building, and the school will begin its new year on or about May 1.

The preparations for the ball to be given in aid of the asylum at the Hotel Washington, Colon, on Saturday, April 26, are completed, and the tickets are selling well. The special train returning to Panama will leave Colon at midnight. The price of the ticket includes transportation on the Panama railroad to Colon and return from any point on the line. Following is the full list of patronesses: Mrs. Porras, Mrs. Goethals, Mrs. Rousseau, Mrs. Devol, Mrs. J. A. Smith, Mrs. Burke, Mrs. Ernesto Lefevre, Mrs. J. A. Arango, and Mrs. E. A. Morales. The two committees as given in last week's issue of THE CANAL RECORD have been made into one executive committee which is composed of the following ladies: Mrs. Pierce, Mrs. Elder, Mrs. Murphy, Mrs. McCormick, Mrs. Kerr, and Mrs. Doyle. The committee is assisted by Dr. Weigle. The members of the floor committee are: Messrs. Dawson, Lee, Bermudez, Espinosa, and Drs. Connor and Beverley. Dr. M. E. Connor is the treasurer.

Church Notes.

A change in the administration of the Wesleyan Methodist Church, at Panama and Colon, has been made by the resignation and removal to Jamaica of the superintendent, the Rev. M. Britton King, and the arrival

of his successor, the Rev. C. G. Hardwick, to take charge of the work. Mr. Hardwick's associate is the Rev. F. T. Palmer, who resides in the parsonage in Colon. Negotiations are pending for a new church building, which will include a parsonage and school-room in place of the old building now in use in Colon. The Panamanian government desires to construct an extension to the old prison building, which adjoins the Wesleyan church buildings, and has made the church an offer which will release this lot to the government. In exchange, the government has offered the church a site on the corner of Seventh street and Broadway. The Wesleyan Methodist church has been established in Panama 31 years, the West Indian work having been extended to include the Isthmus in 1882. There are several mission stations along the line of the Panama railroad. The mission at Colon was originally known as the Taylor mission in honor of Bishop Taylor, the missionary. The foundations for the church in Panama were laid in 1899, but, owing to adverse circumstances, building operations were suspended nearly 10 years, when the cornerstone of a concrete structure was laid on New Year's day, 1908. The new mission house which is situated immediately behind the church was opened in the early part of the present year.

The monthly meeting of the Isthmian Ministers' Association was held at Culebra on Monday, April 7. The principal paper of the afternoon was read by the Rev. J. L. Wise, of Empire.

The officers of the Fidelity Bible Class, at Empire, elected at the meeting in March, entered upon their duties at the meeting on Tuesday afternoon, April 8. They are: President, Mrs. E. C. Soule; first vice-president, Mrs. J. A. Van Hardeveld; second vice-president, Mrs. G. E. Wright; secretary, Miss Mattie Berry; treasurer, Mrs. H. Holmwood. The chairmen of the committees are: Social, Mrs. J. D. Russell; lookout, Miss Florence Satterfield; visiting, Mrs. Frank Peek. Mrs. R. Stanton is the teacher, with Mrs. H. A. A. Smith as assistant. The class will observe Mothers' Day at the meeting on Tuesday, May 13.

Anniversary Celebration, I. O. O. F.

The anniversary celebration of the Independent Order of Odd Fellows will take place at the I. C. C. chapel at Empire on Saturday, April 26, at 8 p. m. All sojourning brothers and their friends and families are invited to attend. The I. O. O. F. lodges on the Isthmus have been asked to participate in the program, and District Deputy Grand Sire B. F. Sisson will give an address upon the early history of the order in the United States. There will be music and refreshments.

Elks' Outing.

Local Elks, with their families and friends, made a sightseeing trip over the Canal on Sunday, April 20. The train started from Colon at 9.15 a. m., and went over all three divisions of the Canal work. Refreshments were served en route. It was expected that a delegation of Chicago Elks would be their guests on this occasion, but a cable was received that owing to the floods, it had been decided to postpone the trip. A meeting of all the Elks on the Isthmus will be held at Kangaroo Hall, Empire, on Sunday, April 27, at 2.30 p. m.

FEDERATION DISBANDS.

Women's Clubs of the Canal Zone Bring Their Work to a Close.

The final meeting of the executive board of the Canal Zone Federation of Women's Clubs was held at the Hotel Washington on Saturday, April 19, every member of the board being present.

The library was presented to the Isthmian Sunday School Association for extension work among the federated Sunday schools in the Canal Zone. The committee on the disposition of the art collection recommended that the collection be presented to the Ancon Study Club. In view of the fact that the books and pictures were a gift of club women to the federation, the logical disposition was to present them in turn to club women in the Canal Zone. The committee recommended that the collection be made available for use among the clubs, such as may remain or be organized hereafter by American women in the Canal Zone, and among the public schools upon request.

The history of the federation will be published at once. Any woman wishing to procure a copy of this work may become a subscriber by applying to Mrs. J. E. Westberg, Empire. If a sufficient number of subscribers is obtained, the price of the history will not be more than 50 cents.

The question of the maintenance of the blind boy now in Perkins Institute, Boston, could not be decided upon and it was found advisable to form a committee for the purpose of carrying on this work.

Following the disbanding of the federation, a committee was formed of the late executive board under the title of the post-federation committee on Elysium James, with Mrs. Thomas Edwin Brown, Jr., Cristobal, as chairman; and Mrs. J. E. Westberg, Empire, as treasurer. The committee is composed of the members of the late executive board of the federation, Mrs. Carl H. Elliott, Cristobal; Mrs. E. J. Neville, Gatun; Mrs. A. H. Herman and Mrs. S. E. Calvit, Gorgona; Mrs. M. E. Smith, Empire; Mrs. Henry Ropes Trask, Culebra; and Miss J. Macklin Beattie, Ancon.

At the close of the meeting, the officers were authorized to destroy all books and documents in their possession and the federation was declared disbanded. A brief history of its organization will appear in an early issue of THE CANAL RECORD.

Police Pistol Match.

A pistol competition of the Division of Police and Prisons will be held at Cristobal, on April 26, at 1 p. m. The following members of the division, having scores of 70 per cent, or better, in their record firing of the past pistol practice season, have been designated as eligible: Capt. C. W. Barber, A. G. Belknap, J. B. Cooper, Leo A. McIntire, Walter F. Doby, Elbert F. Ball, Joseph M. Feeley, William O. Myers, Ambrose Durham, Paul F. Lewis, Y. L. Harvill, John Acors, William Cooney, Sydney King. The competitive firing course will be identical with the course of record firing, namely, five shots each at 15, 25, and 50 yards, bulls-eye target, and 10 shots on the silhouette moving target. Firearms and ammunition are to be service regulation, as issued by the division, trigger pull to be not less than four pounds. To the officers making the three highest scores, suitable medals will be awarded.

JOINT LAND COMMISSION.

An Opinion.

JOINT LAND COMMISSION,
National Palace, Panama.

In the matter of the claim of Augusta Dunlop, Docket No. 7. Opinion on demurrer of United States to jurisdiction of Commission. Attorney for claimant, Valentine E. Bruno, Esq. Attorneys for United States, Hon. Frank Feuille and Wm. K. Jackson, Esq.

On March 24, 1913, Augusta Dunlop, through her attorney, V. E. Bruno, Esq., filed a claim for \$300 for the value of a building located in the town of Pedro Miguel, which building had been torn down by order of the Isthmian Canal Commission. This building was constructed on land held under lease No. 869, granted by the Isthmian Canal Commission on January 1, 1905.

The attorneys for the United States, Hon. Frank Feuille and Wm. K. Jackson, Esq., on March 28, 1913, filed a demurrer to the jurisdiction of the Commission.

Lease No. 869, filed by the claimant contains the following provisions:

"And the party of the second part hereby covenants to pay to the United States the yearly rent above reserved, on the date above mentioned; that this lease shall be revocable at will by the Secretary of War; and to pay to the United States on demand any sum which may have to be expended after the expiration or revocation of this lease in putting the said premises or property in as good condition for use by the United States as it is at this date.

"And it is further agreed that after the expiration or revocation of this lease the party of the second part shall remove the buildings and other property which he may have on the said premises, within such time as the Secretary of War may indicate, and upon his refusal, neglect, or inability to remove the same the Secretary of War may cause them to be removed at the expense of the party of the second part, and no claim for damages against the United States, or any agent thereof, shall be created by or made on account of such removal. Provided, that if at the expiration or revocation of this lease, there shall be any part of the rent herein agreed to be paid, due by the party of the second part to the party of the first part, the party of the second part shall forfeit, without formality or legal proceeding of any sort, any improvements that may have been erected on the land described above, by said party of the second part."

In determining the limits of jurisdiction of the Joint Commission established by Articles VI and XV of the Treaty between the United States of America and the Republic of Panama, concluded November 18, 1903, it is essential to bear in mind that this Commission was created for the purpose of discharging an international obligation, and not with the intent of placing under its jurisdiction questions of a purely municipal character. It is clear that when a person has accepted a revocable lease or license from the United States Government, such lease or license is accepted subject to the powers specifically reserved by the United States Government or its agent, the Isthmian Canal Commission, to revoke the lease or license, and to require the removal of any building erected thereon. The relationship is a purely municipal one, and involves nothing in the nature of an international obligation to be discharged under the Treaty.

We have therefore reached the conclusion that it is not within the province of the Joint Land Commission to take cognizance of claims arising out of the revocation of revocable leases or licenses issued by the Isthmian Canal Commission. Such claims have no organic relation to the grants contained in the Treaty, nor to the international obligation which the United States has agreed to discharge under the Treaty; and for the adjudication of all such claims, the claimants must seek a remedy through the procedure afforded by municipal laws.

The demurrer of counsel for the United

PANAMA RAILROAD COMPANY.

PASSENGER TRAIN TIME TABLE No. 14—IN EFFECT APRIL 27, 1913.

STATION. (Read down.)	Dis- tance from Colon	SOUTHWARD.											
		Sat. only.	Sunday only.								Daily except Sun- day.		
		71	31	29	27	25	23	21	19	7	5	3	
Leave.		P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	A. M.	P. M.	A. M.	A. M.	
Colon.....	0	6.10	10.30	7.10	4.10	1.10	10.10	6.50	12.30	4.25	10.30	5.10	
Mount Hope.....	1.57	86.15	10.35	87.15	84.15	81.15	10.15	86.55	12.35	84.30	10.35	85.15	
Mindi.....	4.36	6.20	10.40	7.20	4.20	1.20	10.20	7.00	12.40	4.35	10.39	5.20	
New Gatun.....	5.94	86.25	10.44	87.25	84.24	81.25	10.25	87.05	12.45	84.39	10.43	85.23	
Gatun.....	6.79	86.30	10.49	87.30	84.29	81.30	10.30	87.10	12.50	84.44	10.50	85.28	
Monte Lirio.....	14.50	86.43	11.02	87.43	84.42	81.42	10.42	87.25	13.03	84.57	11.03	85.40	
Frijoles.....	20.94	86.55	11.13	87.54	84.53	81.53	10.53	87.37	13.15	85.08	11.14	85.50	
Gorgona.....	33.11	87.27	11.43	88.28	85.23	82.25	11.24	88.08	13.48	85.38	11.44	86.18	
Matachin.....	31.70	87.32	11.48	88.30	85.28	82.29	11.29	88.12	13.53	85.43	11.48	86.22	
Bas Obispo.....	32.63	87.37	11.52	88.35	85.32	82.33	11.33	88.18	13.59	85.47	11.53	86.27	
Las Cascadas.....	34.24	87.42	11.57	88.40	85.37	82.37	11.37	88.24	14.04	85.52	11.58	86.32	
Empire.....	36.53	87.48	12.04	88.46	85.44	82.45	11.43	88.31	14.10	85.59	12.06	86.38	
Culebra.....	37.52	87.54	12.09	88.51	85.49	82.50	11.48	88.37	14.15	86.04	12.11	86.43	
Paraiso Jct.....	41.36	88.06	12.21	89.02	86.01	83.02	11.59	88.49	14.26	86.16	12.23	86.55	
Pedro Miguel.....	41.75	88.08	12.23	89.04	86.03	83.06	12.01	88.51	14.28	86.18	12.27	86.58	
Miraflores.....	43.25	88.13	12.28	89.09	86.08	83.11	12.06	88.56	14.33	86.23	12.32	87.03	
Corozal.....	45.75	88.20	12.35	89.16	86.15	83.17	12.12	89.02	14.40	86.30	12.40	87.11	
Diablo.....	46.43	88.22	12.37	89.18	86.17	83.19	12.14	89.05	14.42	86.32	12.42	87.13	
Panama.....	48.59	88.30	12.45	89.25	86.25	83.25	12.20	89.10	14.50	86.40	12.50	87.20	
Arrive.		P. M.	A. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	P. M.	A. M.	
s, Stop	f, Flag	71	31	29	27	25	23	21	19	7	5	3	

STATION. (Read up.)	Dis- tance from Colon.	NORTHWARD.												
		Daily except Sunday.				Sunday only.						Mon- day only.	Satur- day only.	
		2	4	6	8	18	20	22	24	26	28	*30	72	
Arrive.		A. M.	P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	A. M.	P. M.	
Colon.....	.00	9.05	12.25	3.40	7.40	2.35	8.50	12.10	3.15	6.10	9.10	1.15	9.30	
Mount Hope.....	1.57	89.00	12.20	3.35	7.35	2.30	8.45	12.05	3.10	6.05	89.05	1.10	89.25	
Mindi.....	4.36	8.54	12.14	3.29	7.29	2.25	8.39	11.50	3.04	5.59	8.59	1.04	9.19	
New Gatun.....	5.94	88.51	12.11	3.26	7.26	2.21	88.36	11.56	3.01	5.56	88.56	1.01	89.16	
Gatun.....	6.79	88.47	12.07	3.22	7.21	2.18	88.33	11.51	2.57	5.53	88.53	12.58	89.13	
Monte Lirio.....	14.50	88.35	11.52	3.07	7.06	2.04	88.20	11.44	2.42	5.39	88.40	12.44	88.58	
Frijoles.....	20.94	88.24	11.40	2.55	6.55	1.52	88.08	11.2	2.30	5.27	88.28	12.32	88.46	
Gorgona.....	33.11	7.53	11.09	2.26	6.24	1.21	7.38	10.5	1.58	4.57	7.57	12.01	8.16	
Matachin.....	31.70	87.48	11.04	2.22	6.19	1.16	7.33	10.5	1.53	4.52	7.52	11.56	8.11	
Bas Obispo.....	32.63	87.44	11.00	2.18	6.15	1.12	87.29	10.4	1.49	4.48	7.48	11.52	8.07	
Las Cascadas.....	34.24	87.38	10.55	2.14	6.10	1.07	87.25	10.4	1.44	4.44	7.44	11.47	8.03	
Empire.....	36.53	87.33	10.49	2.09	6.04	1.01	87.19	10.3	1.38	4.38	7.38	11.41	8.00	
Culebra.....	37.52	87.28	10.44	2.04	6.00	1.00	87.14	10.3	1.33	4.33	7.33	11.36	7.52	
Paraiso Jct.....	41.36	87.14	10.30	1.51	5.45	12.43	87.01	10.21	1.20	4.20	7.20	11.23	7.40	
Pedro Miguel.....	41.75	87.13	10.29	1.50	5.44	12.41	86.59	10.1	1.19	4.18	7.18	11.21	7.38	
Miraflores.....	43.25	87.08	10.24	1.45	5.39	12.36	86.54	10.1	1.14	4.13	7.13	11.16	7.33	
Corozal.....	45.75	86.58	10.18	1.37	5.33	12.28	86.47	10.0	1.08	4.07	7.07	11.08	7.27	
Diablo.....	46.43	86.53	10.13	1.32	5.28	12.23	86.44	10.0	1.05	4.04	7.04	11.04	7.24	
Panama.....	48.59	86.50	10.10	1.30	5.25	12.20	86.40	10.00	1.00	4.00	7.00	11.00	7.22	
Leave.		A. M.	A. M.	P. M.	P. M.	A. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	
f, Flag.	s, Stop.	2	4	6	8	18	20	22	24	26	28	30	72	

*Leaves Panama Sunday night, arrives Colon Monday morning.

States is therefore sustained, and the claim of Augusta Dunlop dismissed because of lack of jurisdiction.

(Signed) FEDERICO BOYD, ROLAND P. FALKNER. S. LEWIS. L. S. ROWE.

New Timetable.

A new timetable will take effect on the Panama railroad at 12.01 a. m., Sunday, April 27. The principal changes consist in the addition of a Sunday train out of Colon (No. 31,) which will leave there at 10.30 p. m., and arrive at Panama at 12.45 Monday morning. Train No. 3, now leaving Colon daily, except Sunday, at 5.30 a. m., will leave under the new schedule at 5.10, arriving in Panama at 7.20. Train No. 2 out of Panama will leave at 6.50 instead of 6.40 a. m., arriving at Colon at 9.05 a. m.

Train No. 72 on Saturday nights, now leaving at 6 o'clock, will leave at 7.20 after next Sunday. Train No. 18, leaving Panama at 12.40 a. m., Sunday morning, has been substituted for No. 74, leaving Panama at 12.20, arriving at Colon at 2.35 a. m. The traveling time of some of the other trains between Colon and Panama has been lengthened a few minutes.

At the request of the United Fruit Company, the services of Dr. S. T. Darling of the Ancon Hospital laboratory staff have been lent to it for two weeks for the purpose of investigating the cause of a number of recent deaths at Santa Marta, Colombia, near where the company has banana interests. Dr. Darling left for there on one of the company's vessels on Thursday, April 17.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule of moving picture entertainments for the week April 28 to May 3 is as follows: Monday, Culebra; Tuesday, Gatun; Wednesday, Gorgona; Thursday, Empire; Friday, Cristobal; Saturday, Corozal; Friday, Porto Bello.

The standing in the Isthmian Bowling League, April 21, was as follows:

Team.	Won.	Lost	P. C.
Gorgona.....	14	7	667
Empire.....	14	7	667
Culebra.....	11	10	524
Cristobal.....	11	10	524
Gatun.....	9	12	424
Corozal.....	4	17	190

The standing in the American Bowling League, April 21, was as follows:

Team.	Won.	Lost.	P. C.
Empire.....	10	5	667
Cristobal.....	9	6	600
Corozal.....	6	9	400
Gatun.....	5	10	333

CULEBRA.

The Gorgona team took two out of three games with the local team in the Isthmian Duckpin League, Saturday night, April 19, with the following scores:

Gorgona.	Culebra.
Sims..... 99 83 96	Case..... 88 87 93
Dent..... 72	Brown..... 77 89 83
Moyer..... 87 120 89	Silver..... 78 96 92
Dunlap..... 87 82 104	Kierhan..... 94 93 93
King..... 110 74 107	Palmer..... 79 88 82
Davis..... 100 72 109	

Total... 468 431 505 416 453 449
The following high scores were made during the week:
Brown, 100; Case, 110, 124, 103, 122, 105, 102; Seyse, 111, 105; Anderson, 103; Kleene, 100.

EMPIRE.

The standing of the local tenpin tournament is as follows:

Team.	Won.	Lost.	P. C.
Giants.....	10	2	833
White Sox.....	6	3	667
Senators.....	7	5	583
Athletics.....	6	6	500
Tigers.....	4	8	333
Cubs.....	3	12	200

High score so far has been made by C. J. Huson—243; he also holds the high score of 604 for three games. The five highest averages to date are Huson 180-7, Hobbs 166, Bardelson 163-2, J. Whaler 162-4, F. Whaler 158-7. Sixteen men have entered the local monthly handicap pool tournament.

The following scores were made in the Isthmian duckpin tournament:

Empire.....	474	431	483
Gatun.....	452	429	425

The lecture by Mr. F. A. Gause, superintendent of schools, which was to have been given at the clubhouse on Sunday evening, April 20, was postponed until April 27, when the Mosher brothers will probably sing.

The second appearance of the Walter Eccles concert company on Monday evening, April 21, drew one of the largest audiences that has ever attended a concert in the Empire clubhouse.

The dates for the curio exhibits is May 1 and 2. Every one is invited to contribute articles of interest for the exhibit.

GORGONA.

A "smoker" is being planned for Friday evening, April 25.

The Spanish class is open to any one desiring to take the course. The classes meet on Tuesday of each week.

The indoor baseball game scheduled by Gorgona for Saturday evening will be played at Cristobal instead.

The Gorgona chorus gave a return engagement on Sunday evening, April 20.

The Gorgona bowling team bowled at Culebra Saturday evening.

Following are the high scores for the last two weeks: Dent 100, 100 102; Davis 102, 108, 103, 108, 106, 103 101, 108; Varenkamp 101, 111; Nelson 100, 100; Vickers 100; Heinz 104, 102; King 105, 127; Dunlap 105, 112, 106, 108; Regan 105; Sims 113, 106; 104; Norwick 102.

GATUN.

The return engagement of Walter Eccles and the Four College Girls Company at Gatun drew an audience of 502 people, of whom 298 were members. This is probably a local record-breaker for a States entertainment.

Empire took two games of duckpins from Gatun in the American League series rolled on Saturday evening, April 19.

The people of Gatun were given a double treat on Saturday evening, April 19, when the all-Isthmian wrestling tournament was held immediately after the motion pictures. Hughes of Cristobal acted as referee and Wil-

son of Gatun was timekeeper. The results were as follows:

Light weight, 135 pounds or under—L. C. Wright Gatun, vs. H. M. Doherty, Corozal. Wright won.
Welterweight, 145 pounds or under—Theo Edwald, Gorgona, won by default of opponent who failed to appear.

Middle weight, 158 pounds or under—H. Koch, Gatun, vs. P. G. Robinson, Gorgona. Won by Koch.

Light weight, 135 pounds or under—T. L. Martin of Gatun, vs. A. Quinn of Gorgona. Quinn received the decision on aggressiveness.

Heavy weight, over 158 pounds—Robert C. Butler of Corozal, vs. F. W. Nprvak of Gorgona. Won by Butler.

CRISTOBAL.

There was an attendance of 370 at the return engagement of the Walter Eccles and the Four College Girls Company on Friday night, April 18.

The results of the American League Duckpin League games were, as follows:

Cristobal.	Corozal.
Buser..... 79 80 97	Sanders..... 87 88 103
Landers..... 96 81 76	Conner..... 81 77 83
Tuttle..... 88 79 89	Kyte..... 83 79
Cotton..... 92 83 98	Evans..... 78 84 77
Vanderberg. 74 96 89	Bartlett..... 84 91 96
	Ryan..... 86
Total.... 423 419 449	413 417 443

Misdirected Letters.

ANCON, C. Z., April 23, 1913.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of addressees:

Collins, Harry A.	Meixell, B. B.
Coone, Dan	Nelson, Roy
Crawford, Edw. M.	Pfeiffer, R.
Dutwiler, I. K.	Reeves, Mack
Dunn, A. T.	Rojas, Miss Margarita
Felix, Mrs. Louisa	Rothgeb, Mrs. J. N.
Gouldston, A. J.	Sanders, J. T.
Hardel, L.	Schoff, H. B.
Hull, Mrs. W. E.	Seifang, Arthur
Humphrey, Mrs. Minnie	Snyder, Warren K.
Kamphius & Dania	Thorn, L. G.
Kerns, Miss Louise	Ward, Mrs. Philip
Kfnabury, A. H.	Wilcox, Jr., E. J.
Langel, Mrs. Louis	Wilson, W. E.
Lil, H. J. Matthew	Woodford E. T.
McCallum, Walter L.	Woods, W. A.

Sale of Surveying Instruments, Etc.

OFFICE OF DEPOT QUARTERMASTER.

MOUNT HOPE, C. Z., April 19, 1913.

Bids will be received at the office of the Depot Quartermaster, Mount Hope, C. Z., until 2 o'clock p. m., May 3, 1913, when they will be opened in the presence of attending bidders, for any or all transits, levels, compasses, planimeters, etc., now on hand in the storehouse for obsolete material. These instruments may be seen on any working day between the hours of 7 to 11 a. m., and 1 to 5 p. m., on application to this office. The right is reserved to reject any or all bids, or any combination of bids. Bids must be sealed and plainly marked: "Proposal to purchase surveying instruments," addressed to the Depot Quartermaster, Mount Hope, C. Z.

C. NIXON, Depot Quartermaster.

Administrator's Notice.

In the Matter of the Estate of Leslie C. Cunningham—To any and all persons who may have a claim or claims, against the estate of Leslie C. Cunningham, deceased, who died at Pedro Miguel, Canal Zone, on January 31, 1913:

You will present the same on or before, the 15th day of October, 1913, to the undersigned Administrator of said estate, properly verified, or the same will be forever barred according to law.

TOM M. COOKE, Administrator.

Married.

CLEARY-MILTIMORE—On April 12, at St. Luke's Hospital Chapel, Ancon, Miss Mabel Miltimore to John E. Cleary, Maj. Henry A. Brown officiating. Canal Zone residence, Empire.

LOST—On April 13, between Empire and Toro Point, a black ribbon watch fob with lion head locket containing picture of lady and child. Reward of \$5 will be paid for its return to A. E. Alexander, house No. 11-A, Empire, P. O. Box 45.

LOST—In Panama, on April 13, sterling silver Elks' card and receipt case, engraved "Alexandria, La., No. 546" and monogram "M. A. K." Reward, if returned to M. A. Kelly, Corozal.

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday, and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

OFFICIAL CIRCULARS.

Charge for Scrap Rail.

CULEBRA, C. Z., April 18, 1913

CIRCULAR No. 483:

My circular of January 7, 1910, directing that no charge be made between divisions of the Isthmian Canal Commission or Panama Railroad Company for scrap rail is hereby cancelled. In future, a charge of \$7.53 per ton for American scrap rail transferred between divisions of the Commission or between the Commission and Panama Railroad Company will be made in addition to the expense incurred in procuring, straightening, or bending the rail. The \$7.53 per ton is a flat rate to which no surcharge will be added.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Restrictions on Sightseers.

CULEBRA, C. Z., April 17, 1913.

TO ALL CONCERNED:

Difficulty has been experienced in preventing tourists who ride on the Panama railroad sightseeing train from going into dangerous places about the locks. This is due partly to the fact that employees have been taking friends who happen to be among the passengers out on the uncompleted lock gates and to other points equally dangerous, thereby setting an example which some of the other passengers follow despite the instructions of the guides.

In future no employee will be permitted to take passengers on this train to any point not visited by the regular guides, nor shall he in any way delay passengers under his guidance from getting back promptly to the train after the signal for returning has been given.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Assembly of Second-hand Rail.

CULEBRA, C. Z., April 19, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

Reports received from the Depot Quartermaster indicate that there is a shortage of second-hand rail on the Isthmus.

You are requested to take steps immediately to see that all abandoned track is torn up at the earliest practicable date, and serviceable and unserviceable rail turned over to the Depot Quartermaster. Crooked rail will be shipped to the Empire shops to be straightened.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Examination of Railroad Employees.

CULEBRA, C. Z., April 21, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

Referring to instructions issued under date of February 11, 1913, and February 27, 1913, relative to examinations of railway employees:

Employees who are partially color blind, but who do not confuse the colors used in transportation service, namely, red, green, yellow, and white, may be considered eligible for employment as unqualified engineers or conductors, but will not be eligible for qualification. This refers to those cases where the employees do not confuse one of the colors named with any of the other three.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

New Account in Classified Expenditures.

EMPIRE, C. Z., April 10, 1913.

CIRCULAR No. 43:

The following new account in the classified expenditures of the Isthmian Canal Commission is hereby authorized under the Department of Sanitation to care for the operations of the Corozal farm:

Department of Sanitation.

ACCOUNT No. 208—COROZAL FARM.

To this account will be charged all expenses incurred on account of the operation of Corozal farm, including salaries and wages, material and supplies, and the value of all tools, implements and equipment purchased for use thereon. The account will also be charged for the value of such farm products as are used in its operation, and credited for all revenues derived from the sale of its products to other departments and divisions or individuals and companies.

H. A. A. SMITH, Examiner of Accounts.

Approved:

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Treasurer of the Canal Zone.

ANCON, C. Z., April 16, 1913.

Heads of divisions of the Department of Civil Administration, and all others concerned: Effective April 17, 1913, Mr. Eugene H. Ash has been appointed treasurer of the Canal Zone, vice Mr. Edgar P. Beck.

M. H. THATCHER,
Head of Department of Civil Administration.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning April 23, 1913:

FRESH MEATS.	Price.
Mutton—Stewing, per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire forequarter, not trimmed, 10 pounds and over, per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Leg (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	17
Chops, per pound.....	26
Loin for roasting, per pound.....	26
Cutlets, per pound.....	*17
Pork—Loin chops or roast, per pound.....	17
Beef—Suet, per pound.....	2
Stew, per pound.....	8
Soup, per pound.....	5
Plate, per pound.....	9
Corned No. 1, per pound.....	14
Corned No. 2, per pound.....	12
Chuck, roast, 3 lbs. and over.....	12
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds) per pound.....	18
Sirloin roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, Round, per pound.....	13
Chuck, per pound.....	12½
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse, not less than 1½ pounds, per pound.....	20
Tenderloin (Western), per pound.....	30
Venison (Imported), Stew, per pound.....	6
Forequarter, (not under 6½ pounds), per pound.....	9
Rack (not under 5½ pounds) per pound.....	20
Saddle (not under 7½ lbs.), per pound.....	20
Leg (not under 9 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
MISCELLANEOUS.	
Livers—Beef, per pound.....	11
Calf, each.....	60
Half, each.....	30
Steak—Hamburger, per pound.....	13
Sausage—Bologna, per pound.....	13
Frankfurter, per pound.....	13
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	20
Sausage—Meat, per pound.....	20
Sweetbreads—Beef, per pound.....	40
Eggs, fresh, dozen.....	25
one-half dozen only.....	13
Bluefish, per pound.....	15
Halibut, fresh, per pound.....	15
Salmon, per pound.....	12
Oysters, quarts, per keg.....	40

POULTRY AND GAME.

Chickens—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds each.....	1.25
Fancy roasting, corn fed, about 4½ pounds each.....	1.00
Fowls, each.....	*1.00, 70, 80, 90.....
Ducks, (Western, about 4½ pounds), each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	*50
Rabbits, skinned, each.....	30
Ducks, blackhead, pair.....	60
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants, per pair.....	1.30

CURED AND PICKLED MEATS.

Ham—Sugar cured, per pound.....	20
Shoulder, per pound.....	22
Half forequarter, per pound.....	21
Boiled, per pound.....	28
Hocks, per pound.....	28
Beef, salt family, per pound.....	12
Bacon—Breakfast, whole piece, per pound.....	25
Shoulder, per pound.....	26
Ham, Lunch, per pound.....	32

Pork, salt, family, per pound.....	Price.
Ox tongues, each.....	1.00
Pigs feet, per pound.....	9
Tongues, per pound.....	18
DAIRY PRODUCTS.	
Butter—Creamery, special, per pound.....	41
Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Parmesan, per pound.....	35
Snappy, per cake.....	10
Gouda, per pound.....	34
Milk (Certified), per bottle.....	*20
Fer-mil-lac, bottle.....	*20
Ice cream, quart.....	25
½-gallon.....	50
VEGETABLES AND FRUITS.	
Beets, per pound.....	3
Celery, per head.....	11
Cabbage, per pound.....	3
Cucumbers, per pound.....	14
Carrots, per pound.....	3
Egg plants, each.....	10
Onions, per pound.....	3
Potatoes, white, per pound.....	3
new, per pound.....	3
sweet, per pound.....	2
Parsnips, per pound.....	3½
Parsley bunch.....	15
Squash, per pound.....	17
Turnips, per pound.....	3
Lettuce.....	*12
Tomatoes.....	*10
Apples, per pound.....	5
Grape fruit, each.....	4
Lemons, dozen.....	24
Limes, per 100.....	80
Oranges, Jamaica, per dozen.....	12

Rainfall from April 1 to 19, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—			
Aspen.....			
Balboa.....			
*Muradores.....			
Pedro Miguel.....	.07	12	.07
Rio Grande.....	.06	12	.07
Central Section—			
Coloia.....	.02	3	.02
*Camacho.....	.01	16	.03
Empire.....	.05	15	.01
Gambou.....	.04	1	.05
*Juan Mina.....	.04	11	.04
Alhucala.....	.03	3	.05
*Gorgona.....	.08	16	.16
*Pruoles.....	.06	3	.14
*Trinidad.....	.14	15	.30
*Monte Lirio.....	.10	6	.14
Atlantic Section—			
Gatun.....	2.06	15	2.44
*Brazos Brook.....	.18	15	.71
Colon.....	.54	18	1.22
*Porto Bello.....	.49	18	.64

*Standard rain gage—readings at 5 p. m., daily. At intermediate rain gage at unstarred stations—values not subject to midnight. †To 5 p. m. April 18.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, April 19, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	Vigia.	Alhucala.	Gambou.	Gatun Lake.
Sun. April 13.....	125.4	91.4	48.8	48.7
Mon. April 14.....	125.4	91.4	48.8	48.7
Tues. April 15.....	125.4	91.4	48.8	48.8
Wed. April 16.....	125.4	91.4	48.8	48.8
Thurs. April 17.....	125.4	91.3	48.8	48.8
Fri. April 18.....	125.4	91.3	48.8	48.8
Sat. April 19.....	125.4	91.3	48.9	48.8
Height of low water to nearest foot.....	125.0	91.0	44.0	

Tide Table.

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
April 27.....	2.11	8.23	2.40	8.37	
April 28.....	3.10	9.23	3.45	9.44	
April 29.....	4.13	10.35	4.55	11.05	
April 30.....	5.20	11.47	6.05		
May 1.....			P.M.		
May 1.....	12.21	6.22	12.43	7.00	
May 2.....	1.18	7.13	1.30	7.45	
May 3.....	2.00	7.55	2.05	8.22	

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Advance.....	P. R. R. Saturday.....	Apr. 19
Panama.....	P. R. R. Friday.....	Apr. 25
Allianca.....	P. R. R. Thursday.....	May 1
Colon.....	P. R. R. Wednesday.....	May 7
Advance.....	P. R. R. Tuesday.....	May 13
Panama.....	P. R. R. Tuesday.....	May 20
Allianca.....	P. R. R. Monday.....	May 26

CRISTOBAL TO NEW YORK.

Colon.....	P. R. R. Thursday.....	Apr. 24
Advance.....	P. R. R. Thursday.....	May 1
Panama.....	P. R. R. Wednesday.....	May 7
Allianca.....	P. R. R. Tuesday.....	May 13
Colon.....	P. R. R. Monday.....	May 19
Advance.....	P. R. R. Monday.....	May 26
Panama.....	P. R. R. Sunday.....	June 1
Allianca.....	P. R. R. Saturday.....	June 7

NEW YORK TO COLON.

Santa Marta.....	U. F. C. Wednesday.....	April 16
Carl Schurz.....	H.-A. Saturday.....	April 19
Pastores.....	U. F. C. Saturday.....	April 19
Metapan.....	U. F. C. Wednesday.....	April 23
Trent.....	R. M. Saturday.....	April 26
Prinz August Wilhelm H.-A.....	Saturday.....	April 26
Zacapa.....	U. F. C. Wednesday.....	April 30
Emil L. Boas.....	H.-A. Saturday.....	May 3
Sixaola.....	U. F. C. Saturday.....	May 3
Almirante.....	U. F. C. Wednesday.....	May 7
Prinz Joachim.....	H.-A. Saturday.....	May 10
Carrillo.....	U. F. C. Saturday.....	May 10
Magdalena.....	R. M. Saturday.....	May 10
Santa Marta.....	U. F. C. Wednesday.....	May 14
Carl Schurz.....	H.-A. Saturday.....	May 17
Pastores.....	U. F. C. Saturday.....	May 17
Metapan.....	U. F. C. Wednesday.....	May 21
Prinz August Wilhelm H.-A.....	Saturday.....	May 24
Tivives.....	U. F. C. Saturday.....	May 24
Tagus.....	R. M. Saturday.....	May 24

COLON TO NEW YORK.

Emil L. Boas.....	H.-A. Wednesday.....	April 23
Almirante.....	U. F. C. Thursday.....	April 24
Magdalena.....	R. M. Tuesday.....	April 29
Prinz Joachim.....	H.-A. Tuesday.....	April 29
Santa Marta.....	U. F. C. Thursday.....	May 1
Pastores.....	U. F. C. Tuesday.....	May 6
Carl Schurz.....	H.-A. Wednesday.....	May 7
Metapan.....	U. F. C. Thursday.....	May 8
Tagus.....	R. M. Tuesday.....	May 13
Tivives.....	U. F. C. Tuesday.....	May 13
Zacapa.....	Y. F. C. Thursday.....	May 15
Sixaola.....	U. F. C. Tuesday.....	May 20
Emil L. Boas.....	H.-A. Wednesday.....	May 21
Almirante.....	U. F. C. Thursday.....	May 22
Oruba.....	R. M. Tuesday.....	May 27

NEW ORLEANS TO COLON.

Turrialba.....	U. F. C. Saturday.....	April 19
Cartago.....	U. F. C. Wednesday.....	April 23
Abangarez.....	U. F. C. Saturday.....	April 26
Heredia.....	U. F. C. Wednesday.....	April 30
Atenas.....	U. F. C. Saturday.....	May 3
Parismina.....	U. F. C. Wednesday.....	May 7
Turrialba.....	U. F. C. Saturday.....	May 10

COLON TO NEW ORLEANS.

Atenas.....	U. F. C. Thursday.....	April 24
Parismina.....	U. F. C. Saturday.....	April 26
Turrialba.....	U. F. C. Thursday.....	May 1
Cartago.....	U. F. C. Saturday.....	May 3
Abangarez.....	U. F. C. Thursday.....	May 8
Heredia.....	U. F. C. Saturday.....	May 10

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

Hamburg-American steamers for New York via Kingston and Santiago de Cuba, sail thus: The *Carl Schurz* and the *Emil L. Boas* on alternate Wednesdays at 10 a. m., and the *Prinz Joachim* and the *Prinz August Wilhelm* on alternate Tuesdays at 10 a. m.

The arrival and departure of vessels at the port of Balboa for the week ending April 19, follows:

Arrivals—April 14, *Chile*, from Guayaquil; April 14, *Mexico*, from Valparaiso; April 14, *Manavi*, from intermediate points; April 17, *Huallaga*, from Callao; April 19, *Quito*, from Guayaquil.

Departures—April 12, *San José*, to San Francisco; April 12, *Pennsylvania*, to San Francisco; April 14, *Mantaro*, to Valparaiso; April 14, *Palena*, to Valparaiso.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands and address of the Panama Railroad Company for five cents each.

Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

More Work for Pacific Dredges.

The zone of dredging operations at the Pacific end of the Canal will be extended to include the section between the two earth dikes, south of Miraflores Locks. It was originally planned to excavate the material remaining in this section by steamshovels, but as the dredges have nearly finished their work in the Pacific entrance, they will be available for use at this point. About 151,000 cubic yards of material between the two dikes were removed by the hydraulic plant, and 16,000 cubic yards by steamshovels, leaving about 1,400,000 cubic yards to be excavated by the dredges. A dynamite gang is now engaged in blasting over this territory, and will conclude its operations early in May. The south dike acts as a barrier to the open water channel extending from the Pacific entrance. When the space between the dikes is ready to be filled with water, the operation will be accomplished by pumping, instead of allowing the water to flow in by demolishing the south dike. This precaution is taken, in order that the north dike will not be subjected to a too sudden pressure.

Permanent Oil Pipe Line.

The first section of the permanent oil pipe line across the Isthmus will be laid along the Panama railroad relocated line, beginning at a point near Paraiso Cabin, and continuing for the present as far as pipe of proper size, now on the Isthmus, is available. It is estimated that there is about 16,000 feet of this pipe in the various storehouses. The pipe will be eight inches in diameter, strong enough to withstand a regular working pressure of about 420 pounds to the square inch. The work will be performed by the Central Division forces upon request of the Fifth Division, and will include the laying of a connection between the main pipe line, near Paraiso Cabin, and the two oil tanks designed for a storage supply for the hydraulic sluicing operations near Gold Hill. The cost of laying the main line will be charged to a new account to be opened for "Permanent

oil pipe line," while the cost of the connection will be borne by the sluicing plant.

The contract with the Petroleum Iron Works Company for the manufacture and erection of the four new permanent oil tanks described in THE CANAL RECORD of October 9, 1912, has been amplified to include the erection of the two tanks at the sluicing plant. One of these tanks is already on the ground; the other will be moved from Las Cascadas.

Work of the Seagoing Suction Dredges.

The seagoing suction dredge *Caribbean*, which went into the Cristobal drydock on March 25, vacated its berth there on Wednesday, April 16, after a general overhauling, including renewal of the woodwork on its deck houses, repainting inside and out, and the substitution of new forward distributing chutes for old ones. The *Caribbean* is in drydock on an average of about two times a year, once for general overhauling, and once for such urgent repairs as cannot be made by its crew. It and its companion vessel, the *Culebra*, at work in the Pacific entrance, have been in continual service since first placed in commission in 1907. During the calendar year 1912, the *Caribbean* removed 2,603,072 cubic yards from the Atlantic entrance at an average cost of \$0.0387 a cubic yard. The average unit cost of repairs made to the dredge during that year was \$0.0298 to the cubic yard. On the Pacific side, the *Culebra* excavated 2,400,214 cubic yards in 1912 at an average unit cost of \$0.05092 a cubic yard, and the average unit cost of repairs during the same period was \$0.01940 a cubic yard. While the upkeep in the case of the *Caribbean* ran as high as \$71,494.78 during the fiscal year ending June 30, 1912, this dredge, like the *Culebra*, has been kept in a high state of working efficiency.

Change of Color of Passenger Service Cars.

All cars in the passenger service of the Panama railroad are to be painted the Pullman standard color, a dark olive green, instead of the chrome yellow which has been in use for the past three years. Yellow was made the standard in 1909, after a year's comparative test on three coaches painted with it, the Pullman color, and Tuscan red. The test was inconclusive, but the yellow was adopted in the belief that it would deteriorate and change color less in the Isthmian climate than the others. The foreman of the car painters has come to the conclusion that this is not the case; that on the other hand, Pullman standard, which was applied to two private cars and the pay cars, grows dark less rapidly, shows less contrast when spots are retouched, and costs less than the yellow. He estimates that about \$2,000 a year may be saved in maintenance by the use of the Pullman color. The change is to be made now, because a large number of cars is to be overhauled between May 1 and January 1.

Included in the passenger service are all first and second-class coaches, baggage cars, express cars, specie cars, private, parlor, sight-seeing, and refrigerating cars.

Change in Time, Panama-Balboa Labor Train.

The time of the Panama-Balboa labor train, formerly leaving Panama at 5.25 p. m., has been changed so that it will connect with the Pedro Miguel labor train due to arrive in Panama at about 5.39 p. m. The change is made for the convenience of the gold employees who work on the line and take their evening meal at the East Balboa hotel. The transfer from one train to the other is made at the Panama wye.

Over the Canal by Hydrobiplane.

Mr. Robert G. Fowler, the aviator, accompanied by Mr. R. A. Duhem of the Duhem and Harter Motion Picture Company, San Francisco, Cal., made the air voyage from the Pacific to the Atlantic entrance of the Canal on Sunday, April 27. This is said to be the first ocean to ocean flight ever made in a single trip, and is the first time that a flying machine has crossed the Canal Zone from ocean to ocean. Mr. Fowler has been on the Isthmus about three weeks awaiting a favorable opportunity for the crossing, using the bathing beach at Bella Vista as his base of operations. His hydrobiplane is in part constructed from his own design. It was built by the Gage-McClay Company of Los Angeles, Cal., and the 80-horsepower motor was supplied by the Hall-Scott Company of San Francisco. The propellers on the machine are placed in front after the manner of most European biplanes of today. Mr. Fowler began his career as an airman three years ago, and until last year drove a Wright machine. He held the endurance test up to a year ago, and holds the record of a coast to coast trip in the United States. Since coming to the Isthmus he has made six flights, as follows:

April 12—Over Panama and vicinity, without passenger; time in air 15 minutes.

April 12—Over Panama and vicinity, with passenger; time in air 20 minutes.

April 13—Over Panama and vicinity, with passenger and camera; time in air five minutes. Compelled to descend on account of poor gasoline.

April 25—Over Panama and Ancon, without passenger; time in air 15 minutes.

April 25—Over Panama, islands in the bay, Naos Island breakwater, Pacific entrance, and up the Canal as far as Pedro Miguel with passenger and camera. Picture film became exhausted.

April 27—Over Panama to the Pacific entrance and over the entire route of the Canal to Cristobal Point, with passenger and camera; time in air one hour and 35 minutes.

The trip over the Canal was uneventful, with the exception of the descent at Cristobal. The supply of gasoline became exhausted on

NOTES OF PROGRESS.

(Continued.)

nearing the journey's end, and the glide failed to carry the machine to deep water. It landed among the rocks off pier No. 11, wrecking the pontoon. Mr. Fowler and the camera operator left the Pacific entrance at Balboa, according to his own timing, at exactly 10 a. m. The landing was made at Cristobal at 10.57. At Culebra, the aviator made a circle of his machine in order to obtain pictures of both sides of Culebra Cut. At Gamboa, a drenching rain squall was encountered. Pictures were taken only where the Canal work

was in evidence. The greater part of the Canal north of Gamboa, where there is a sameness in physical features, and much of the lake section, were omitted. The highest altitude attained on this flight was 1,800 feet; the lowest, 400 feet. Messrs. Fowler and Duhem sail for New York on the *Ancon* on Friday, May 2.

Examination by Board of Local Inspectors.

The Board of Local Inspectors will conduct examinations at the Administration Building, Ancon on Wednesday, May 7, 1913, beginning promptly at 8 a. m., for persons desiring to secure the following classes of licenses:

Pilots, masters, mates, marine engineers, chauffeurs, and navigators of motor boats. All applicants for licenses must procure from the Executive Office, Ancon, forms of application and information respecting the filling out of same, not later than the day previous to the examination. In addition, all persons desiring chauffeurs' licenses must provide themselves with automobiles with which to demonstrate their ability to properly operate same.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending April 26:

DATE.	Hours worked.	Cubic yards.
April 21.....	5.30	1,696
April 22.....	3.20	1,801
April 23.....	7.30	2,180
April 24.....	6.25	2,720
April 25.....	6.05	1,566
April 26.....	7.30	2,071
Total.....	36.20	12,034

Sailing of the "Ancon."

The sailing date of the steamer *Ancon* has been set for Friday, May 2, at 3 p. m., from pier No. 11, Cristobal.

A revocable license has been granted to Thomas R. Lombard and Company to operate a quarry on land situated in the Canal Zone, on a hill west of the new Chorrillo addition to the city of Panama, now leased by the company from Messrs. A. B. de Obarrio and Domingo Diaz A. The license becomes effective after the United States has acquired title to the property.

One lower tumbler wheel, Lobnitz sand excluding, with sleeve and shaft complete, and one portable grease pump with all attachments, have been ordered purchased in the open market from Lobnitz and Company, Renfrew, Scotland, for the dredge *Corozal*.

A committee has been appointed to consider and recommend a standard specification covering all matters connected with reinforced concrete designs, which, when approved, will be a standard I. C. C. specification governing all departments and divisions of the Canal Commission and the Panama railroad.

It has been decided that in future, when any new repairs are made to the docks and wharves at Colon and Cristobal, precautions will be taken to make the structures ratproof.

CONCRETE WORK IN THE LOCKS AND SPILLWAYS.

About 99 per cent of the entire quantity of concrete to be placed in the locks and spillways had been laid at the close of work on April 26, the amount in place being 4,685 476 cubic yards.

GATUN LOCKS AND SPILLWAY.

Over 98 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on April 26, being 2,021,063 cubic yards, out of a total of 2,043,730. In the spillway of Gatun Dam there had been placed 225,127 cubic yards, about 99 per cent of the total amount. A statement of the amount placed each working day of the week ending April 26, and of the total, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			Large stone	Total	SPILLWAY.		
	Concrete placed.	Hours worked.	No. of mixers			Concrete laid	Hours worked	No. mixers used.
	Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.		
April 21.....	420	7.00	2	.....	420	80	4.30	1
April 22.....	468	8.94	2	.....	468	46	3.75	1
April 23.....	428	7.14	2	.....	428	44	2.25	1
April 24.....	881	14.72	4	.....	884	96	5.00	1
April 25.....	1,020	13.68	4	.....	1,020	74	4.50	1
April 26.....	676	11.26	2	.....	676	100	5.75	1
Total.....	3,896	62.74	2.6	.....	3,896	440	25.75	1
Previously reported.....				.....	2,017,167	224,687		
Grand total.....				.....	2,021,063	225,127		

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 919,959 cubic yards having been placed at the close of work on April 26. The record for each working day of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked	No. of mixers	Concrete placed	Hours worked	No. of mixers			
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.
April 21				47	4.00	1			47
April 22				75	7.00	1			75
April 23									
April 24				30	2.50	1			30
April 25				101	9.00	1	6		107
April 26							10		10
Total				253	22.50	.67	16		269
Previously reported								4,493	919,690
Grand total								4,493	919,959

MIRAFLORES LOCKS AND SPILLWAY.

Over 99 per cent of the concrete for the system of three twin locks at Miraflores was in place on April 26, the total amount on that date being 1,496,661 cubic yards, bucket measurement, out of a total of approximately 1,499,800. At the spillway, 25,666 cubic yards were in place. The record for each day worked last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. ½-cubic yard mixers.			Mixed by hand.	Large stone.	Total.	SPILLWAY.						Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers				CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 1-cubic yard mixers.			
										Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	
April 21.....	Cu. Yds. 356	14.33	6	Cu. Yds. 55	8.00	1	Cu. Yds.	Cu. Yds.	Cu. Yds. 391	Cu. Yds. 176	See time under locks.		Cu. Yds. 160	8.50	2	Cu. Yds. 366
April 22.....	352	18.83	6	14	2.00	1	1	367	68	78		4.00	1	146		
April 23.....	244	7.67	6	14	2.00	1	11	269	22	79		3.50	1	101		
April 24.....	300	10.67	6					300	20	197		9.00	2	217		
April 25.....	516	12.67	6					516	28	191		10.00	2	219		
April 26.....	278	14.33	6					278	288	112		5.50	2	400		
Total.....	2,026	78.50	6	83	12.00	.50	12		2,121	602			817	40.50	1.67	1,419
Previously reported								3,693	1,494,540							24,247
Grand total.....								3,693	1,496,661							25,666

CANAL MEDAL LIST.

(Continued.)

On the following list are the names of American employees of the Isthmian Canal Commission, who have completed two years of continuous service on the Isthmus during the twelve months ending December 31, 1912, and are in consequence entitled to receive a Canal medal. The date shown opposite each name is that from which medal service is computed.

The list is published in order that it may be carefully checked by those interested. Any omissions, errors in spelling of names, or in the dates from which service is reckoned, should be promptly reported to the Office of the Chairman for correction.

A continuation of the medal list, together with a list covering employees of the Panama railroad, as well as the bar lists for both I. C. C. and P. R. R. employees, will appear in later issues.

Heads of divisions are requested to check carefully their lists of American employees on the silver roll, and to report any omissions on the medal or bar lists to this office.

Name.	Date.	Name.	Date.	Name.	Date.	Name.	Date.	Name.	Date.
1910.									
Mills, Roscoe L.....	June 27	Miller, Frank.....	July 27	Patterson, Bertha M.....	Sept. 5	Eason, William E.....	Oct. 1	Heinze, Richard C.....	Oct. 27
Porter, Edward G.....	June 27	Burke, Alexander W.....	July 30	Girard, Ernest J.....	Sept. 6	Fromholtz, Rolf.....	Oct. 1	Smith, Thaddeus DeL.....	Oct. 27
Sherrard, Grover C.....	June 27	Downes, John J.....	July 30	Burnham, Sophia H.....	Sept. 8	Kobely, Fred C.....	Oct. 1	Cartier, Henry F.....	Oct. 28
Smith, George B.....	June 27	Randall, Leverett L.....	July 30	Campbell, Albert E.....	Sept. 8	McCarthy, Edith Mac-		Hershey, Alvin D.....	Oct. 28
Bretz, William.....	June 28	Vallley, John L. J.....	July 30	Hamm, Jacob M.....	Sept. 8	Intyre.....	Oct. 1	Rabiteau, Edward.....	Oct. 28
Sherrard, Thomas W.....	June 28	Mitchell, Harry S.....	Aug. 1	James, Matthew T.....	Sept. 8	Smith, George.....	Oct. 1	Rutherford Richard H.....	Oct. 28
Sweat, William P.....	June 28	Shadrick, John H.....	Aug. 1	Jasmer, Hugo O. R.....	Sept. 8	Strother, Edwin S.....	Oct. 1	Sullivan, James A.....	Oct. 28
Armstrong, Benjamin A.....	June 30	Holmwood, Harry.....	Aug. 2	MacGowan, David.....	Sept. 8	Voyles, Clara L.....	Oct. 1	Criste, Robert C.....	Nov. 1
Craven, Hugh E.....	June 30	Wilkie, Samuel G.....	Aug. 3	Reardon, John J.....	Sept. 8	Whiting, Wenonah A.....	Oct. 1	Hoe, Matthew J.....	Nov. 1
Halbig, Harry C.....	June 30	Bradford, Ernest.....	Aug. 4	Sonnenberg Joseph.....	Sept. 8	Williams, Harry E.....	Oct. 1	Hudson, Orran L.....	Nov. 1
Hanson, John T.....	June 30	Buschmann, Anthony.....	Aug. 4	Britton, Fannie L.....	Sept. 9	Bruce, Samuel R.....	Oct. 3	Keily, Anna L.....	Nov. 1
Hobart, Francis A.....	June 30	Croll, Harry C.....	Aug. 4	Miller, Jacob.....	Sept. 9	Prater, Andrew F.....	Oct. 3	O'Brien, Joseph A.....	Nov. 3
Jansen, Charles.....	June 30	Kaufmann, Roy H.....	Aug. 4	Phelps, Bruce M. M.....	Sept. 9	Reed, George.....	Oct. 4	Arthur, Austin C.....	Nov. 4
Keough, John M.....	June 30	Vance, James St. C.....	Aug. 4	Ross, William A.....	Sept. 9	Ross, Charles C.....	Oct. 4	Smith, Carl.....	Nov. 4
Mitchell, John A.....	June 30	Wier, Charles A.....	Aug. 4	Stringer, John E.....	Sept. 9	Connely, William J.....	Oct. 5	Ward, John A.....	Nov. 4
Carkett, Stuart G.....	July 1	Wilson, John D.....	Aug. 4	Weinstein, Henry.....	Sept. 9	Gimbel, John C.....	Oct. 5	Harrison, Charles P.....	Nov. 5
Colberg, Albert W.....	July 1	Wise, William I.....	Aug. 4	Zulla, William.....	Sept. 9	Goeman, Samuel A.....	Oct. 5	Shanahan, Joseph R.....	Nov. 5
Lux, Samuel L.....	July 1	Zachary, William R.....	Aug. 9	Cline, John.....	Sept. 13	Green, Frank D.....	Oct. 5	Tnatcher, Floyd.....	Nov. 5
Anderson, Daniel.....	July 7	Anderson, Carl.....	Aug. 11	Jarboe, Grover C.....	Sept. 13	Kuentz, Oscar O.....	Oct. 5	Kruse, Frans J.....	Nov. 6
Briggs, Ray M.....	July 7	Bare, Henry.....	Aug. 11	Quick, Paul H.....	Sept. 13	Luce, Edwin L.....	Oct. 5	Murray, Richard.....	Nov. 7
Buckley, Donald.....	July 7	Cannon, Carl E.....	Aug. 11	McLellan, John A.....	Sept. 14	Pierce, Flavel S.....	Oct. 5	Shepherd, William B.....	Nov. 7
Clapp, Benjamin W.....	July 7	Daugntry, Willie W.....	Aug. 11	White, Mark.....	Sept. 14	Louden, Herman P.....	Oct. 6	McGowan, Elbert J.....	Nov. 8
Cone, Percy S.....	July 7	Frazier, Frank.....	Aug. 11	Coleman, Albert J.....	Sept. 15	McCullough, Eugene D.....	Oct. 6	Miller, Charles J.....	Nov. 8
De Loos, Irvin N.....	July 7	Hong, Sara C.....	Aug. 11	Entrekin, Herman A.....	Sept. 15	Ohlhausen, Henry.....	Oct. 6	Kerchner, William G.....	Nov. 10
Ermentrout, Robert R.....	July 7	Lawson, William J.....	Aug. 11	Rhear, Albert N.....	Sept. 15	Pearson, James M.....	Oct. 6	Mason, Roy G.....	Nov. 10
Frost, Walter B.....	July 7	Lewis, Albert.....	Aug. 11	Violette, Frank W.....	Sept. 15	Read, Marion O.....	Oct. 6	Miller, Hilton A.....	Nov. 10
Jasper, Grover R.....	July 7	Payne, James T., Jr.....	Aug. 11	Barnes, Earlbert E.....	Sept. 16	Steelman, Lawrence B.....	Oct. 6	Sherbourne, Walter F.....	Nov. 10
Keller, Edward W.....	July 7	Stuart, Frank S.....	Aug. 11	Byrne, Joseph A.....	Sept. 16	Weber, Charles O.....	Oct. 6	Sims, Luther C.....	Nov. 10
McKeon, George.....	July 7	Beck, Thomas E.....	Aug. 15	Ellsworth, DeWitt T.....	Sept. 16	Wilson, William.....	Oct. 7	Weaver, Hannah M.....	Nov. 10
Nicol, Henry.....	July 7	Berg, Charles G.....	Aug. 17	Gleason, James P.....	Sept. 16	Bean, Ernest C.....	Oct. 8	Bernsee, Frederick L.....	Nov. 11
Patterson, George.....	July 7	Ott, Victor L.....	Aug. 17	Hake, Jacob A.....	Sept. 16	Johnson, Claude M.....	Oct. 10	Bewley, Samuel B.....	Nov. 11
Shaughnessy, James.....	July 7	Ringger, George A.....	Aug. 17	Higley, Homer L.....	Sept. 16	Battenfeld, Charles E.....	Oct. 11	Crawford, Fred T.....	Nov. 11
Swaim, Lindian J.....	July 7	Wright, George L.....	Aug. 17	Ingram, Ira M.....	Sept. 16	Chambers, Thomas H.....	Oct. 11	Frink, Frank E.....	Nov. 11
Neese, Harry J.....	July 8	Foster, John D.....	Aug. 18	Onken, George P.....	Sept. 16	Donauue, Joseph L.....	Oct. 11	Gause, Charles E.....	Nov. 11
Scriven, Bethnel W.....	July 9	Hanson, Arthur.....	Aug. 18	Nelson, Frank L.....	Sept. 17	Gier, Bert H.....	Oct. 11	Goethals, George R.....	Nov. 11
Born, William.....	July 11	Hanson, Robert W.....	Aug. 18	Woods, George S.....	Sept. 17	Greener, Fred T.....	Oct. 11	Graham, William C.....	Nov. 11
Atkinson, Rha L.....	July 13	Nelson, Ernest B.....	Aug. 18	Schofield, Harrison.....	Sept. 19	Nielsen, Dora.....	Oct. 11	Lenzen, Joseph C.....	Nov. 11
Berdeau, Ray W.....	July 13	Page, Jennie E.....	Aug. 18	Casey, Thomas L.....	Sept. 20	Noweck, Frederick W.....	Oct. 11	Marsh, Bernard W.....	Nov. 11
Brennan, Joseph A.....	July 13	Small, Ralph V.....	Aug. 18	Porter, Robert S.....	Sept. 20	Phalon, Daniel J.....	Oct. 11	Shinton, Roscoe C.....	Nov. 11
Calloway, Vern D.....	July 13	Mello, Manuel J.....	Aug. 22	Crain, Fred O.....	Sept. 22	Poole, John S.....	Oct. 11	Corson, Warren M.....	Nov. 12
Foster, Stephen E.....	July 13	Blackburn, W. A.....	Aug. 23	Rist, Harry W.....	Sept. 22	Smith, Lucian C.....	Oct. 11	Sargent, Don C.....	Nov. 12
Markey, James F.....	July 13	Claybourn, John G.....	Aug. 23	Allen, Harry G.....	Sept. 23	Thompson, William L.....	Oct. 11	Steiner, Henry.....	Nov. 12
Hutchinson, Harry W.....	July 14	Fiske, Harold L.....	Aug. 23	Bethea, Adger W.....	Sept. 23	Van Zandt, Albert.....	Oct. 11	Merrill, George E.....	Nov. 14
Riebe, Burton.....	July 14	Hildore, William F.....	Aug. 23	Curry, Lawrence J.....	Sept. 23	Borgen, Alexander W.....	Oct. 11	Bruce, Owen E.....	Nov. 15
Riley, William.....	July 15	Hogan, Charles.....	Aug. 23	Ferguson, John L.....	Sept. 23	Briggs, Frank M.....	Oct. 13	Reed, William F.....	Nov. 15
Whaley, James.....	July 15	MacKenzie, James A.....	Aug. 23	Mumm, Amelia A.....	Sept. 23	Conner, Walter T.....	Oct. 13	Ritter, Frank.....	Nov. 15
Gardner, William C.....	July 16	Maloney, Martin W.....	Aug. 23	Seeley, John H.....	Sept. 23	Martin, George W.....	Oct. 13	Smith, Everett C., Jr.....	Nov. 15
Kelly, William E.....	July 16	Niven, Charles L.....	Aug. 23	Leighton, William W.....	Sept. 24	Shirley, Thomas J.....	Oct. 13	Snyder, Hubert E.....	Nov. 15
Scott, Morse P.....	July 16	Parsons, Earl R.....	Aug. 23	Oettli, Charles.....	Sept. 24	Emerson, James G.....	Oct. 14	Core, Henry C.....	Nov. 16
LeSassier, John J.....	July 18	Reese, William J.....	Aug. 23	Quynn, John W.....	Sept. 24	Hart, Charles H.....	Oct. 14	Cocanougher, Lolie T.....	Nov. 17
Luebbe, Leo B.....	July 18	Stone, Ralph E.....	Aug. 23	Sykes, Dana C.....	Sept. 24	Ross, Daniel.....	Oct. 14	Coffin, Joseph W.....	Nov. 17
Berger, Elizabeth B.....	July 19	Farr, Robert H.....	Aug. 24	Tryon, Alfred A.....	Sept. 24	Arner, Otto H.....	Oct. 17	Comer, Ragner O.....	Nov. 17
Carr, Byron T.....	July 19	Winland, Gilbert C.....	Aug. 24	Lainhardt, Earle.....	Sept. 26	Gehring, George M.....	Oct. 17	Compton, Rolla A.....	Nov. 17
Cave, Edward S., Jr.....	July 19	Hammond, Arthur H.....	Aug. 25	Luzaters, Verd V.....	Sept. 26	Gutman, Max.....	Oct. 17	Dunlop, Andrew.....	Nov. 17
Dobson, Gilbert C.....	July 19	Horle, Albert M.....	Aug. 25	Twitchell, James N.....	Sept. 26	Kirby, Lee S.....	Oct. 17	Evans, David J.....	Nov. 17
Grishaber, Emma L.....	July 19	King, Lewis A.....	Aug. 26	Bishop, Joseph S.....	Sept. 27	Markham, Carl W.....	Oct. 17	Gaul, Reno E.....	Nov. 17
Holmelin, Victor R.....	July 19	Benson, Robey W.....	Aug. 29	Hepler, Mark T.....	Sept. 27	Toppa, Albert B.....	Oct. 17	Johnson, James A.....	Nov. 17
Langesen, Thue.....	July 19	Moll, Rudolf E.....	Aug. 29	Duffy, John J.....	Sept. 29	Harsh, Dan W.....	Oct. 18	Jones, William H.....	Nov. 17
Lister, James A.....	July 19	Walsh, Walter F.....	Aug. 29	Duncan, Frederick R.....	Sept. 29	Crowell, Kenneth L.....	Oct. 19	Kilcorse, Robert G.....	Nov. 17
Lucas, Howard M.....	July 19	Montane, Edmund.....	Aug. 30	Emerson, Gertrude S.....	Sept. 29	Cliff, Benjamin F.....	Oct. 20	McGowan, James.....	Nov. 17
Osmond, George J.....	July 19	Fikming, Andrew.....	Aug. 31	Fitch, Ethel A.....	Sept. 29	Casanova, Clement F.....	Oct. 22	Mannix, Frank T.....	Nov. 17
Milligan, James A.....	July 20	Sherrard, John D.....	Aug. 31	Houle, Emma.....	Sept. 29	Hearn, John W., Jr.....	Oct. 22	Rhodes, Harry H.....	Nov. 17
Merry, Augustus B.....	July 21	Chinn, Clement B.....	Sept. 1	Knapp, Josephine B.....	Sept. 29	Vetal, Clinton H.....	Oct. 24	Hipp, Malcolm D.....	Nov. 18
Watkins, Sidney E.....	July 21	Soule, Horace.....	Sept. 1	Patterson, Cunnin-		Warren, Theodore.....	Oct. 24	Love, Warren.....	Nov. 18
Baylor, Stewart W.....	July 24	Thompson, Carter W.....	Sept. 1	ham.....	Sept. 29	Briggs, John H.....	Oct. 25	Hoeine, Adelbert.....	Nov. 19
Bucher, Amiee A.....	July 24	Cook, Harvey E.....	Sept. 2	Peterson, Charles.....	Sept. 29	Collier, Wm. W., Jr.....	Oct. 25	Keller, Theodore.....	Nov. 19
Doran, Thomas J.....	July 24	Jacques, Charles G.....	Sept. 2	Rodgers, Manuel.....	Sept. 29	Knox, Rowland K.....	Oct. 25	Garlow, William A.....	Nov. 22
Singer, Henry H.....	July 24	Thomas, August.....	Sept. 3	Baird, Earl W.....	Sept. 30	Lister, Noah E.....	Oct. 25	King, Harry E.....	Nov. 22
Wedwaldt, Harry.....	July 24	Call, Mary L.....	Sept. 5	Fowler, Jennie M.....	Sept. 30	McGrath, James E.....	Oct. 25	Lucas, John M.....	Nov. 22
Willoughby, Sadye E.....	July 24	Heimer, Floyd B.....	Sept. 5	Hodnett, Henry F., Jr.....	Sept. 30	Mitten, H. W.....	Oct. 25	MacArthur, John.....	Nov. 22
de Montell, Oscar.....	July 25	Keasey, Evelyn L.....	Sept. 5	Christopherson, Ed-		Nelson, Paul E.....	Oct. 25	Singley, Sidney F.....	Nov. 22
Brugge, Fred P.....	July 26	Kenney, Caleb S.....	Sept. 5	mund D.....	Oct. 1	Sweeney, John M.....	Oct. 25	Smith, James D.....	Nov. 22
Walsh, Ernest L.....	July 26	Moyers, Harvey G.....	Sept. 5	Cobban, Emma M.....	Oct. 1	Tompkins, Herbert S.....	Oct. 25	Vance, George L.....	Nov. 22
		Nelson, Robinson.....	Sept. 5	Dougherty, Bruce T.....	Oct. 1	Knox, Benjamin C.....	Oct. 26		

(To be Continued)

NO SALOONS IN ZONE.

Canal Commission Will Not Grant Licenses for Sale of Liquor.

At a meeting of the Canal Commissioners held on Thursday, April 24, the following resolution was adopted:

"RESOLVED, that no license for the sale of intoxicating liquors in the Canal Zone be granted by the Commission for any period beginning on or after July 1, 1913."

During the present fiscal year, there were five Canal Zone settlements in which saloons were permitted, namely, New Gatun, Gorgona, Matachin, Empire, and Culebra, and for this period, beginning July 1, 1912, thirty-eight licenses were granted by the Commission in those towns. The early abandonment of Gorgona and Matachin eliminated those villages as future license points; the proximity of Empire to Camp Otis made it advisable to stop granting licenses there, and the same reason applied to Culebra. This left only one town, New Gatun, open for the granting of licenses, and in view of this fact it was decided to extend the prohibition to include the whole of the Zone.

A statement of the number of saloon licenses granted in the Canal Zone each semiannual period from July 1, 1907, to June 30, 1913, and the license fees collected for each semiannual period, and for each fiscal year, follows:

FISCAL YEAR	Semiannual period.	No. licenses	Amount fees.
1907-08	July 1 to December 31, 1907	34	\$20,400
	January 1 to June 30, 1908...	34	20,400
	Total for fiscal year.....		\$40,800
1908-09	July 1 to December 31, 1908	63	\$37,800
	January 1 to June 30, 1909...	58	34,800
	Total for fiscal year.....		\$72,600
1909-10	July 1 to December 31, 1909	57	\$34,200
	January 1 to June 30, 1910...	52	31,200
	Total for fiscal year.....		\$65,400
1910-11	July 1 to December 31, 1910	57	\$34,200
	January 1 to June 30, 1911...	57	34,200
	Total for fiscal year.....		\$68,400
1911-12	July 1 to December 31, 1911	48	\$28,800
	January 1 to June 30, 1912...	44	26,400
	Total for fiscal year.....		\$55,200
1912-13	July 1 to December 31, 1912	38	\$22,800
	January 1 to June 30, 1913...	35	21,000
	Total for fiscal year.....		\$43,800
Grand total for entire period—six years....			\$326,200

In 1907, the plan of assigning certain areas, in the Zone for the sale of intoxicating liquors was adopted. At that time these areas included the towns of Rio Grande, Culebra, Empire, Las Cascadas, Bas Obispo, Matachin, Gorgona, Tabernilla, Bohio, and Gatun. Saloons were established in all of those places up to 1911, when Bas Obispo, Tabernilla, and Bohio were eliminated from the saloon area, Bas Obispo on account of its proximity to the camp of United States Marines, and Tabernilla and Bohio, because of their prospective abandonment by reason of the filling of Gatun Lake. In 1912, the area was further restricted by the elimination of Rio Grande and Las Cascadas, leaving only five towns in which licenses were in force on July 1, 1912. The greatest number of licenses issued for any one semiannual period was that from July 1 to December 31, 1908, when there were 63. The moneys derived from the granting of licenses for the retail sale of intoxicating liquors, which were fixed at \$1,200

per annum each, have formed part of the Canal Zone general fund, from which money has been appropriated as needed for carrying out public improvements, maintenance of the Canal Zone school system, and for other purposes.

Pumping of Sewage at Golden Green.

A change is to be made in the method of handling the sewage in the village of Golden Green, near Empire. There are now six community closets into which the sewage of the town is dumped, and from which it is removed by carts. In order to reduce the expense of handling, it has been decided to install a portable pump which can be moved from one closet to another. This pump will force the sewage through a 6-inch pipe discharging into the open sanitary ditch that serves Culebra at a point near the Panama railroad culvert at Lirio. The length of the pipeline will be about 2,000 feet.

Tennis Association Tournament.

The Maduro-Lupi cup became the property of the Ancon club, as the result of the tournament, in doubles, held by the Isthmian Tennis Association at Ancon, on Sunday, April 27. The preliminaries, semi-finals, and finals, were as follows:

Preliminaries—Tivoli (Ohlson and Edwards) defeated Culebra (Goethals and Tupper) 6-0, 6-4.

Empire (Bartholomew and Newbold) defeated Colon (Hart and Farquharson) 6-3, 5-7, 6-4.

Ancon Hospital (Ross and Runyan) defeated Gatun (Wells and Neeley) 7-5, 1-6, 6-3.

Semifinals—Ancon Hospital defeated Tivoli 2-6, 6-1, 6-2.

Pacific Club (Snyder and Pearman) defeated Empire 11-9, 6-2.

Finals—Ancon Hospital defeated Pacific Club 4-6, 6-4, 8-6.

The Maduro-Lupi cup was won by the Empire club in 1910, and by the Ancon Hospital club in 1911, 1912, and 1913. According to the rules governing the gift of the cup to the association, any club winning it three consecutive times becomes its permanent possessor.

At a meeting of the officers of the association held on Sunday, April 27, it was decided to have a free-for-all tennis tournament, in singles, on Sunday, May 11, at Ancon, in place of the regular association tournament, in singles, scheduled for that date. Any member of a club affiliated with the association may enter. The entrance fee for this tournament will be \$1 for each player, and must be in the hands of the acting secretary, C. E. Nevius, Ancon, C. Z., not later than May 8.

Joint Land Commission.

Notice is hereby given that hearings will be held by the Joint Land Commission on the following estates, at the dates named: Monday, April 28: Barro Colorado Abajo, Peñas Blancas Arriba; Monday, May 5: Juan Grande; Tuesday, May 6: DeBosque Estate (lands at Matachin), Tabernilla; Monday, May 12: Cuatro Calles; Tuesday, May 13: San Antonio y Charco Baruco; Wednesday, May 14: Juan Mina; Monday, May 19: Bohio y Buena Vista; Tuesday, May 20: Peñas Blancas en Medio; Wednesday, May 21: Buena Vista y Agua Salud.

Notice is hereby given to all persons having title to the lands above named, as the owners

thereof, or having any right, claim or interest therein, as occupants or otherwise, to present claims without delay. All persons delaying the filing of such claims will do so at their own risk, as there will be no postponement, on this account, of the consideration of the cases on the dates announced.

By order of the Joint Land Commission.

J. C. LUITWIELER,
Panama, April 21, 1913. *Secretary.*

Notice to Mariners.

Owing to location of maneuvering chains of the dredges *Corozal* and *Badger*, commercial ships will not be permitted to drop anchor and turn in the basin north of the Panama railroad wharf. The channel in front of the dock is gridironed with chains from these dredges, and shipmasters must not drop anchors in front of the wharf.

C. H. MANN, *Port Captain.*

Balboa, C. Z., April 26, 1913.

Accidental Drowning.

First Lieutenant Charles F. Conry of the Tenth Infantry, Camp Otis, and Private Edward P. Callaghan of Company K of the same regiment, were drowned in the West Division, near Gatun, on Friday, April 25. The two men were in temporary camp with others of the regiment at New Gatun, and were last seen at about 3 o'clock Friday afternoon. They stated that they were going for a trip by boat on the lake or river. Search parties were organized when the men failed to appear, but it was not until about 11 o'clock Sunday forenoon that the bodies were found.

Lieutenant Conry was born in Ohio on January 29, 1882; graduated from the United States Military Academy with the class of 1904; was assigned to the Tenth Infantry as second lieutenant on June 15, 1904, and was promoted to first lieutenant on March 11, 1911.

Private Callaghan's military record is, as follows: In Company D, Second Infantry, from June 9, 1904, to January 9, 1906; January 10, 1906, to January 9, 1909, and from January 10, 1909 to January 12, 1912; enlisted at Fort Slocum, N. Y., for three years on October 13, 1912; arrived on the Isthmus and was assigned to Company K, Tenth Infantry, on November 15, 1912. He had a campaign badge for service in the Philippines, and was a sharpshooter in his first enlistment. He was born at Rochester, N. Y., and is survived by his mother, Mrs. Julia Callaghan, and by two brothers and a sister, all residing in that city.

Obituary.

John J. Sofaly, a private in the United States Marine Corps at Camp Elliott, died at 12.05 Saturday morning from an injury received while at target practice on Thursday April 24. He was standing in the target butts when a piece of a deflected bullet struck him in the throat. He enlisted at McKeesport, Pa., on November 15, 1911, and was 25 years of age. His father, Frank Sofaly, lives at Irwin, Pa.

Memorial Service.

A memorial service to Mr. Olof Johnson will be held at the Commission chapel, Gatun, on Sunday, May, 4, at 10.45 a. m., under the auspices of the Independent Order of Odd Fellows, and the Masonic club of Gatun. These orders have invited members and friends to be present.

MAKING DREDGE SPUDS.

Native Timber Braced by Steel Plates for Atlantic Dipper Dredges.

In the manufacture of new forward spuds for the Atlantic Division dipper dredges *Mindi* and *Chagres*, it has been found necessary to resort temporarily to the use of native wood, owing to lack of other timber of suitable size in the Canal Commission stock piles. The native timber is obtained from large trees found here and there in the vicinity of Gatun Dam. They are cut down, hauled by rail to the Cristobal marine shops, where they are shaped to the required size. The wood is fairly close grained, slightly resembles oak, but is full of sap and does not have the resisting power of Douglas fir or yellow pine, the wood commonly used for this purpose. Spuds made of native wood have been tried, but it has been found that they do not last long, and only serve as a temporary substitute. In order to strengthen and keep them in service as long as possible, the plan has been adopted of encasing the timbers, American, as well as native stock, in iron plates made into a continuous piece by welding the short lengths together in the smith shop at the drydock plant. Each of these plates, when finished, is three-fourths of an inch thick, 36 inches wide, and 48 feet long, and is fastened to the spud timbers by one and one-eighth inch rivets. When the heads of the bolts are sunk in the timber, the holes are capped with pieces of wood to prevent the exposed surfaces from corroding. The plan of using plates has also been tried on some of the spuds on the dredges in the Pacific entrance to the Canal, but the welding in this case was done in the United States, and shipment made in the proper lengths.

The plates, four to each timber, will give an added weight to each of the new spuds of about nine tons, making the total weight of the longer pieces over 20 tons each. The spuds used on the dredge *Mindi* are 40 by 40 inches square, and 57 feet long; those on the *Chagres* are 36 by 36 inches square, and 68 feet long. New spuds for these two dredges are being formed out of four timbers, cut from native stock, and securely bolted together. In addition, a spud is being made for the *Chagres* out of a single piece shipped from the United States.

The life of a spud timber varies, and depends in a great measure on the strain to which it may be subjected. During the past two years, the *Mindi* has broken nine, and the *Chagres* 19 spuds. The greater breakage in the case of the *Chagres* is mainly due to the fact that its spuds are considerably longer than those of the *Mindi*, and, in consequence, are subjected to a greater strain; also, that the sectional area of its spuds is smaller. When unfitted for further use, the old spuds are stripped of their ironwork and piled up in one part of the marine shops yard. An effort is being made by Mount Hope Depot to work them up into smaller pieces.

Bids for the Tug "Bolivar" Rejected.

Bids were opened at the office of the Panama Railroad Company in Colon on April 10, for the sale of the tug *Bolivar*, which was retired from the railroad service at Balboa a short time ago. Four proposals were received, all from Panama firms or individuals, as follows; Heurtematte and Company, \$10,000; J. A. Jimenez, \$12,000; Pinel

Brothers, \$12,200; Cia. Panameña de Vapores, \$12,500. The bids were rejected as being too low, and new proposals will be advertised for both here and abroad. The *Bolivar* is of 234 gross tons capacity and cost when new \$52,000. The fire tug *Phoenix*, of 161 gross tons capacity, formerly in the Panama railroad service, sold in New York for \$25,000. It cost when new \$57,942.53.

Competitive Pistol Shoot.

The results in the competitive pistol firing test among the marksmen of the Division of Police and Prisons, held at the Cristobal range on Saturday, April 26 were, as follows:

NAME.	Bull's eye target.	SCORE.*	
		Moving target.	Aggregate.
Lee A. McIntire	135	41	176
J. B. Cooper	124	41	165
Joseph M. Feeley	126	39	165
Charles W. Barber	119	39	158
William Cooney	116	41	157
Ambrose Durham	115	41	156
William O. Myers	123	33	156
John Acors	130	26	156
Andrew G. Belknap	109	33	142
Paul F. Lewis	112	27	139
Sydney King	110	27	137
Y. L. Harvill	110	24	134
Elbert F. Ball	100	31	131
Walter F. Doby	90	24	114

*Possible score 200.

The tie score between Inspector J. B. Cooper and First-class Policeman Joseph M. Feeley was decided on high score made on moving target. The men holding the three highest scores will be awarded medals.

Results of Indoor Pistol Matches at Culebra.

The indoor championship matches recently held at Culebra, under the direction of the Culebra Pistol Club, have been completed with the following results (shot at 20 yards at night under artificial light):

Match A, revolver, possible 500, M. W. Fox 404; C. B. Larzelere 391; M. E. Woodward 384; L. D. Cornish 377; Jacob Bernson 359.

Match B, pistol, possible 500, M. W. Fox 424; Jacob Bernson 417; L. D. Cornish 399; C. B. Larzelere 395.

Match F, pocket revolver, possible 250, Jacob Bernson 161; L. D. Cornish 156; M. W. Fox 151; C. B. Larzelere 133; M. E. Woodward 117.

Match G, novice, reentry, possible 250, W. L. G. Perry 152, 191; Miss Shellie M. Dunn 190; M. E. Woodward 190, 182, 187; B. Balduf 182, 174; T. E. L. Lipsey 166, 181, 172.

Central Section Water Supply.

A high-duty plunger pump, 14-inch suction and 10-inch discharge, capacity 1,500 gallons a minute, has been added to the auxiliary water supply from the Chagres River near Gamboa to furnish water for mechanical and domestic purposes in addition to the present centrifugal pumps installed. This pump was used during the dry season of last year by the Central Division but was transferred to the Atlantic Division for sluicing work in the locks and afterward for stripping a quarry at Quebrancha on the Panama railroad relocation, it being returned after the abandonment of this quarry.

Both the Camacho and the Caribali reservoirs are holding out better than last dry season. The present daily delivery from Camacho reservoir is from 750,000 to 1,000,000 gallons, and from Caribali, from 450,000

to 500,000 gallons. The Chagres River pumping station is able to supply 3,000,000 gallons daily, and at present is pumping into the feeder mains about 2,500,000 gallons every 24 hours. On April 19, there was a total supply remaining in Camacho reservoir of 73,924,000 gallons, as compared with 52,353,000 gallons for the same time a year ago; and in Caribali reservoir there was a total supply of 23,040,000 gallons, as compared with 12,960,000 gallons on the same date last year. The water from the Chagres is not filtered, the residents of the Central Division villages being supplied with condensed water for drinking purposes.

Wool and Cotton Shipments from Infected Ports.

The local quarantine regulations against wool and cotton coming from infected ports on the west coast of South America and shipped across the Isthmus are only such as to prevent the introduction of plague as a result of these articles harboring rats and fleas. Cargoes of wool and cotton in transit are often stored on the Isthmus for several days awaiting transshipment and reloading, and on this account, are almost as dangerous from the standpoint of possible infection as cargoes that remain here.

Practically all of the cotton from Peruvian ports is shipped from Callao and Payta. The regulations require that cotton from Callao be certified by the officer of the United States Public Health Service stationed there, as not having been stored in rat-infested warehouses, and that it, in his opinion, is free from danger of conveying infection. Cotton from Payta, where there is no United States public health officer, is received under certificate of the American Consul in accordance with the practice in vogue for the past three years. The shipment of wool from Mollendo is subjected to regulations that require the cargo to remain in the cars until ready for transfer to vessel; furthermore, that cotton and wool be stored in the holds of vessels and be thoroughly fumigated before arrival at Balboa.

The only prohibition that has been placed in effect is that on shipments of cotton from Eten, on account of the severe epidemic of plague prevalent there, and at Chiclayo, the town for which Eten is the port. The shipments from Eten, however, are not large. Plague has been more prevalent in the ports of Peru, and towns adjacent thereto, during the present season than for the past two or three years, and the regulations enforced against shipments of wool and cotton are only aimed to prevent the introduction of plague through these agents as vermin carriers.

Bids for Radio Station at Caimito.

Bids for a high power radio station at Caimito, C. Z., will be opened at the Bureau of Yards and Docks, Navy Department, Washington, D. C., at 11 a. m., May 10.

Missing Man.

Any one having information regarding the whereabouts of Richard T. Dodge who left Buffalo, N. Y., last February, and who is supposed to be on the Isthmus, is requested to communicate with the American Legation, Panama.

The tide gage, formerly stationed in the Pacific entrance to the Canal, has been removed on account of dredging operations in that vicinity. It will be installed at the lower end of Miraflores Locks.

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

The sixth annual meeting of the Cristobal Woman's Club was held in the Commission clubhouse, Cristobal, on Wednesday afternoon, April 23. Two members who were present at the organization of the club on September 27, 1907, were among those at the meeting. The officers for 1912-1913 were held over until October 1, when an adjourned session of the annual meeting will be held. The corresponding secretary, Mrs. Charles Butters, will conduct any correspondence for the club during the recess and the philanthropy committee will have power to act upon all matters that properly come under its consideration. The members of this committee are: Mrs. Lewis Webster, Mrs. M. C. Rerdell, and Mrs. L. E. Willson. The health committee will also continue to act, under Mrs. Thomas E. Brown, Jr. The club closed the year with a membership of 25. Mrs. Carl H. Elliott is the president, having succeeded Mrs. J. L. Storla, who resigned in February.

The sixth year of the Cristobal Woman's Club was opened with a general reception on September 28. There have been seven general meetings. The programs covered a wide range of subjects, and included one health lecture and one lecture on woman suffrage. The home department has held several meetings, with appropriate programs, and the eight meetings of the art and literature department have been of special interest. Under the health committee, two free lectures have been held in Colon. The committee has funds for continuing this work, and at least one more lecture will be given this year.

On Friday, April 25, the Cristobal club gave a reception in honor of Mrs. J. A. Smith, who sailed for the United States on the day following. Mrs. Smith has been a member of the Cecelian Chorus since its organization in 1908.

Church Work.

Bishop Homer C. Stuntz, bishop of the Methodist Episcopal Church, with residence in Buenos Aires, arrived in Panama on April 28 for his first visit to the Methodist mission here. He will remain on the Isthmus until May 6.

Services are being held in the seawall church, Panama, every evening this week, with preaching by Bishop Stuntz. Accompanying the bishop is the Rev. Thomas B. Wood, one of the first hospital chaplains appointed by the Canal Commission. Dr. Wood was appointed on the Isthmus by Governor Magoon as chaplain in the Health Department with duties at Ancon Hospital, on October 16, 1905, and continued in the service until September 15, 1906.

On Saturday afternoon and evening the members of the Panama church will hold a reception in the parsonage over the church in honor of Bishop and Mrs. Stuntz, and Dr. and Mrs. Wood.

Isthmian Sunday Schools.

The quarterly meeting of the Isthmian Sunday School Association was held in the Commission chapel at Gorgona on Sunday, April 20, with 73 members of the various Sunday schools in attendance. Under the head of new business, a committee was appointed to place before the Canal Commission a petition for a building for Sunday school purposes, with a playground attached, in

the largest permanent village in the Canal Zone, probably Balboa. The president, the Rev. A. A. Nellis, reported that the gift of books from the Canal Zone Federation of Women's Clubs had been received; that the library had been enlarged in six groups and boxed, and that these groups were ready to be forwarded to any Sunday school upon request. The secretary, W. N. Windes, having resigned, Mr. J. F. Warner of Culebra was appointed to fill the unexpired term. The following program was given: Song service, beginning at 2.30 p. m.; Scripture reading and invocation, the Rev. C. O. Purdy, Gatun; song, the congregation; roll call and reports from the schools; minutes of the previous meeting, the secretary; solo, Miss Marie Louise Ensminger; duet, Mr. and Mrs. George R. D. Kramer; "The Sunday school teacher," address, by Miss Elsie Keyser, Ancon; vocal solo, Mrs. Purdy, Gatun; "The aim of the Sunday school" address, by J. M. Weaver, Cristobal.

Owing to the prospective abandonment of the village of Gorgona, the next meeting will be held in the Commission chapel at Empire, on July 6, or 13.

Anniversary Celebration of Odd Fellows.

The Canal Zone lodges of the Independent Order of Odd Fellows, with the auxiliary, the Daughters of Rebekah, celebrated the ninety-fourth anniversary of the founding of the order in the Commission chapel, Empire, on Saturday evening, April 26. In the absence of the District Deputy Grand Sire, B. F. Sisson, the presiding officer, Past Grand H. W. Dohrman, presided. Speeches were made by Past Grand Charles Beetham, representing the Gorgona lodge; Vice-Grand William McLaughlin, representing Canal Zone Lodge, No. 3, Empire; Past Noble Grand Janet Martin, representing the Rebekah Lodge, No. 1, Gorgona, and Mr. Dohrman, who read a brief historical sketch of the order. These speeches were interspersed with musical numbers, as follows: Soprano solo, Miss Myrtle Byram, piano duet, the Misses Mabel and Gladys Byram, baritone solo, Mr. Charles Beetham, and vocal duet, Mr. Beetham and Mr. Dohrman, accompanied by Mrs. Beetham. Annual celebrations of the order have been held in the Canal Zone since 1906. There are six lodges including the auxiliary. The Independent Order of Odd Fellows was instituted at Baltimore, Md., under the title of Washington Lodge, on April 26, 1819. There are at present 17,985 lodges and 9,543 auxiliaries, with a total membership of more than 2,000,000, making the order the strongest, numerically, in the world. Since its institution the expenditures for benefits have been \$150,000,000.

The employees of the Panama railroad and commissary department have chartered a special sightseeing train for Sunday, May 11. This train will leave Colon station at 8 a. m., and will cover all points of interest between Colon and Balboa. The return trip from Panama will be made on the 7 o'clock p. m. train out of Panama.

All Vanderbilt University men are requested to send their names, addresses, and year of graduation to J. V. Delgado, Ph. C., '12, Colon, R. de P., or to M. E. Henry, M. D., '12, care of Colon Hospital, Colon.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule of moving picture entertainments for the week May 5 to 10, is, as follows: Monday, Empire; Tuesday, Gorgona; Wednesday, Corozal; Thursday, Cristobal; Friday, Gatun; Saturday, Culebra; Friday, Porto Bello.

The standing of the Isthmian Bowling League, on April 28 was, as follows:

	Won	Lost	P.C.
Gorgona.....	17	7	708
Empire.....	15	9	625
Culebra.....	14	10	583
Cristobal.....	13	11	542
Gatun.....	9	15	375
Corozal.....	4	20	167

The standing of the American Duckpin League remains as on April 21, no games having been bowled on April 26.

The standing of the Indoor Baseball League, April 28 is, as follows:

	Won	Lost	P.C.
Camp Elliott.....	1	0	1000
Gatun.....	1	0	1000
Cristobal.....	1	0	1000
Gorgona.....	0	1	.....
Empire.....	0	1	.....
Corozal.....	0	1	.....

The schedule of the first series of engagements for the Apollo Concert Company is, as follows: Friday, May 2, Gorgona; Saturday, Culebra; Monday, Gatun; Tuesday, Cristobal; Wednesday, Empire; Friday, Corozal; Saturday, Porto Bello.

COROZAL.

The American League duckpin games scheduled for Saturday, April 26, were not bowled as three of the members were not able to be present.

The first league baseball game of the season was played on Saturday, April 26, with the team from Camp Elliott. The score by innings follows:

	1	2	3	4	5	6	7	8	9
Camp Elliott.....	5	1	1	0	1	1	0	8	—18
Corozal.....	3	8	0	0	0	0	0	1	0—12

The players for Camp Elliott were: Messrs. O'Brien, Waldbridge, Johnson, Harper, Dejrre, McDonald, and J. G. Anderson; for Corozal: Messrs. Roberts, Kenny, Emerson, Souder, Potter, Sims, Mitchell, and Erickson.

The hall was again filled on Wednesday night, April 23, when the Walter Eccles and Four College Girls Company gave its second entertainment.

Empire will play indoor baseball at the clubhouse on Saturday, May 3.

CULEBRA.

Culebra took three straight games from the Corozal team in the Isthmian Duckpin Bowling League on Saturday, April 26, with the following scores:

	Corozal.	Culebra.
King.....	89 101 79	Case..... 104 94 99
Ziller.....	85 79 90	Silver..... 88 96 105
Rvans.....	80 85 89	Brown..... 92 103 106
Humphrey.....	86 73 76	Palmer..... 84 84 86
Dalton.....	91 107 91	Kiernan..... 81 88 101

431 445 425 449 465 497
The following high scores were bowled during the week: Ferguson 112, 101, 106; Case 106, 101, 104, 106; Kiernan 105, 111, 101, 114; Chadbourne 106; Brown 103, 106; Silver 105; Johnson 100.

Arrangement are being made for an open air concert by the Tenth Infantry Band next week. Announcement of the date will be made by bulletins.

The Apollo Concert Company will appear at Culebra on Saturday night, May 3, at 8 p. m. Admission will be, as follows: Members, free; adult nonmembers, 50 cents; children, 25 cents. Reserved seats may be procured on and after Thursday morning, May 1, at the office of the secretary.

EMPIRE.

On Saturday night, April 26, the Gatun indoor baseball team won the first league game of the season from the Empire team, the score being 40 to 39. Considerable interest is being manifested in this pastime, and it is requested that all who desire to play come out and practice.

Mr. Frank A. Gause gave an interesting lecture on Sunday night, April 27, on the Life of Abraham Lincoln. The Mosher brothers of Cristobal sang.

GORGONA.

A "smoker" will be given on Thursday evening to which all the men of Gorgona are invited.

The Gorgona baseball team will play at Gatun next Saturday evening.

The Cristobal bowling team will bowl at Gorgona on Saturday, May 3.

The Spanish class has not met this week, due to the absence of the instructor. The classes will resume the second week of May.

A large crowd attended the entertainment on Friday evening entitled "The country school." This enter-

tainment was made up of local talent. The program was, as follows: Roll call by the teacher; opening song; assignment of lessons; 30-minute study period; visit of the school board; solos, recitations, duets, and school songs.

GATUN.

A handicap elimination pool tournament and a three-cushion billiard tournament will be started on Monday, May 5. Any member of the association may enter. One pool table was recently recovered and three first-class ivory billiard balls were received last week from the United States. Mr. DePoorter will arrange details and will be in charge of both tournaments.

An effort is being made to infuse new interest into both the senior and married men's gymnasium classes. Both classes will meet on Wednesday and Friday this week, the married men's class at 5.30 p. m., and the senior class at 8 p. m. On Wednesday evening at 6.15 the married men will play the single men a game of volleyball.

Gorgona will play indoor baseball at Gatun on Saturday evening, May 3. Members and their friends are invited to see the game.

An interesting chess match is scheduled to be played on Thursday evening, May 1, when Mr. Walter J. Shutes will meet any number of other players simultaneously.

Gorgona took three games from the local team in the Isthmian bowling league on Saturday, April 26, with the following scores:

Gorgona.....	478....	481....	488
Gatun.....	422....	434....	441

CRISTOBAL.

Cristobal won the opening game of the Isthmian Indoor Baseball League, which was played with Gorgona, by a score of 18 to 12. The lineup was, as follows:

Gorgona—G. Morrison c., Christensen p., Burweiser 1b., Martin 2b., Morton 3b., Quinn ss.

Cristobal—MacSparran c., Russell p., Wehmeier 1b., Levy 2b., Frazer 3b., D. Raymond ss., D. Simons l.f. Umpires, Duer and Shradley.

The results of the bowling between Empire and Cristobal were, as follows:

Empire				Cristobal			
Pinney.....	74.....			Barrett.....	84	92	104
Giavelli.....	79	102	82	Herrington.....	99	92	86
Potter.....	97	97	85	Collins.....	87	89	87
Rodeghiero.....	96	88	90	Smith.....	91	85	102
Gustavson.....	81	93	99	Bullard.....	100	112	96
DeCora.....	99	76					
	427	479	432		461	470	475

Empire rolls Cristobal in the American Bowling League tournament on Wednesday night.

On Saturday night, Camp Elliott will play Cristobal indoor baseball on the home floor.

Tickets for the Apollo Concert Company's entertainment, Tuesday night, May 6, will be on sale beginning Friday, May 2.

PORTO BELLO.

On Sunday night, April 20, Mr. S. P. Verner of the Sanitary Department gave an interesting address on Africa.

On Wednesday night, April 23, Rev. A. A. Nellis preached on the "Temptations of Jesus" to an audience of about 80.

The visiting men of the Tenth Infantry were guests of the Y. M. C. A. at the moving picture show on Friday evening, April 25.

Saturday night, April 26, a farewell reception was given Mr. and Mrs. Schreiber, Mr. and Mrs. Werner, and Miss Margaret Werner, Mr. and Mrs. Quinn and family, and Dr. and Mrs. W. C. Gibson. Music was furnished by the Tenth Infantry orchestra.

Arrangements are being made for observing Mother's Day, Sunday, May 11, and Children's Day, Sunday, June 8, by the members of the Sunday school.

Mr. Chas. M. Chase, formerly president of the Christian Endeavor Society of the Union Church, Cristobal, will speak at the song service, Sunday night, May 4.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa during the two weeks ending April 26:

Almerian, April 12, from Liverpool, with 202 barrels carbolic acid, for stock; 15 cases machinery, for Fifth Division.

Sixsofa, April 13, from New York, with 239 pieces structural steel, Atlantic Division; 69 packages plumbing material, 10 reels electric cable, 194 cases electrical material, First Division; 73 cases transil oil, Atlantic Division; 6 cases bells, Mechanical Division; 1,035 sacks oats, 10 cases sheet copper, stock.

Emil L. Boas, April 13, from New York, with 186 kegs bolts and rivets, stock.

Heredia, April 14, from New Orleans, with 622 pieces yellow pine lumber, 3 reels steel cable, Mechanical

Division; 1,906 pieces cross ties, 46 pieces piling, 3,793 pieces yellow pine lumber, 1,094 pieces pipe, 112 pieces white oak lumber, stock.

Almirante, April 16, from New York, with 131 pieces structural steel, Atlantic Division; 27 reels insulated wire, 240 cases electrical material, First Division; 240 cases electrical material, First Division; 21 bales packing, stock.

Alenas, April 17, from New Orleans, with 168 pieces yellow pine lumber, Mechanical Division; 8,238 pieces yellow pine lumber, 1,344 pieces cross ties, 89 pieces piling, stock.

Colon, April 18, from New York, with 32 crates handles, 78 pieces lumber, 50 cases graphite, 11 pieces steel angles, 15 pigs type metal, 17 cases mullage, 111 bundles galvanized sheets, 60 cases sal soda, 18 cases torpedoes, 10 barrels soap flake, 20 cases paper, stock, 90 kegs chlorate of potash, 500 pieces car couplers, 100 barrels sand, 414 pieces steel castings, 13 barrels coupler parts, Mechanical Division; 92 barrels solid asphalt, 10 crates roofing felt, Fortifications; 60 barrels leadite, Fifth Division; and a miscellaneous cargo, the whole consisting of 2,032 packages, weighing 230 tons.

Carrillo, April 20, from New York, with 4 reels electric cable, 16 cases electrical material, First Division; 10 crates hardware, 50 cases lye, 60 crates water pails, 170 bales wire fencing, stock; 10 cases structural steel, emergency dams; 410 pieces structural steel, Mechanical Division.

Parismina, April 21, from New Orleans, with 396 pieces yellow pine lumber, Mechanical Division, 2,666 pieces cross-ties, 2,475 pieces yellow pine lumber, 234 bales prairie hay, 89 barrels fire clay, stock.

Prinz Joachim, April 21, New York, with 15 cases paper, stock; 7 pieces gas cylinders, 50 packages buoy parts, Lighthouse Division.

Ancon, April 22, New York, with 145,382 bags cement, Atlantic and Fifth Divisions; 277 pieces structural steel, Atlantic Division; 435 bundles steel bars, Second Division; 19 packages boiler and fittings, Sixth Division; 491 barrels sand, 75 cases brake shoes, 3 cases tools, Mechanical Division; 300 kegs bolts, 65 coils rope, stock.

Santa Marta, April 23, New York, with 30 barrels rosin, 50 bundles baskets, 10 cases cordage, stock; 11 reels electric cable, 127 cases electric machinery, First Division; 266 packages structural steel, Atlantic Division.

Turridalva, April 24, New Orleans, with 276 packages car castings, 95 pieces white oak lumber, Mechanical Division; 374 pieces cross-ties, 76 pieces piling, 16 pieces white oak lumber, 6,332 pieces yellow pine lumber, 50 cases paint, 20 rolls duck, stock.

Lewis Luckenbach, April 24, San Francisco, with 10 crates rubber nose, stock.

Cuzco, April 25, Tacoma, Wash., with 25 pieces spud timbers, Atlantic Division; 2,900 pieces redwood lumber, Mechanical Division; 1,348 pieces Douglas fir lumber, First Division; 65,492 pieces Douglas fir lumber, stock.

Advance, April 26, New York, with 391 bags silica grit, 60 reels wire 200 pieces car castings, 60 brake shoes, Mechanical Division; 146 packages valves and pipe, Atlantic Division; 300 pieces pipe, 200 kegs bolts, 80 coils Manila rope, 260 bags tie plugs, 16 bales waste, 28 crates brooms and brushes, 41 packages pipe-fittings, stock; 60 packages drugs and sundries, Sanitary Department; and a miscellaneous cargo, the whole consisting of 1,985 packages, weighing 200 tons.

Sale of Household Goods.

MOUNT HOPE, C. Z., April 30, 1913.

The following articles are on hand at Mount Hope Depot in the storehouse for obsolete material and are available for sale to employees at prices shown:

16 boards, meat cutting, No. 3, 16" x 18" each 10c; 21 boards, meat cutting, No. 3, 12" x 18" each 10c; 3 blocks, meat, hardwood, 12" x 16" each 16c; 10 blocks, pastry, birchwood, 20" x 30" each 22c; 2 blocks, pastry, birchwood, 20" x 24", each 22c; 3 blocks, pastry, birchwood, 18" x 24", each 19c; 32 breakers, ice, each 65c; 9 cutters, bread, Acme, each \$1.25; 14 cutters, slaw, w/boxes (3 blades), each 53c; 144 sticks, candle, agate, each 4c.

These articles will be disposed of for cash and may be seen on any working day between the hours of 7 to 11 a. m., and 1 to 5 p. m.

C. NIXON, Depot Quartermaster.

Sale of Surveying Instruments, Etc.

MOUNT HOPE, C. Z., April 19, 1913.

Bids will be received at the office of the Depot Quartermaster, Mount Hope, C. Z., until 2 o'clock p. m., May 3, 1913, when they will be opened in the presence of attending bidders, for any or all transits, levels, compasses, planometers, etc., now on hand in the storehouse for obsolete material. These instruments may be seen on any working day between the hours of 7 to 11 a. m., and 1 to 5 p. m., on application to this office. The right is reserved to reject any or all bids, or any combination of bids. Bids must be sealed and plainly marked: "Proposal to purchase surveying instruments," addressed to the Depot Quartermaster, Mount Hope, C. Z.

C. NIXON, Depot Quartermaster.

OFFICIAL CIRCULARS.

Consolidation of Dredging Work.

CULEBRA, C. Z., April 26, 1913.

CIRCULAR No. 183-U:

Effective May 1, 1913, the following changes are made in the organization of the Department of Construction and Engineering:

The dredging work, now in the Atlantic Division, together with the dredges, barges and forces in that service will be transferred to the Sixth Division of the Chief Engineer's Office, thus consolidating all dredging under the supervision and direction of the resident engineer, Mr. W. G. Comber.

The drydock and its shops will be transferred to the Mechanical Division.

Arrangements will be made between the division engineer of the Atlantic Division and the resident engineer of the Sixth Division for the joint use of tugs, as well as other facilities, forces, etc., that can be utilized to advantage by both interests.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Procedure in Transfer of Employees.

CULEBRA, C. Z., April 21, 1913.

CIRCULAR No. 357 E:

Before an employee is transferred from one division or department of the Commission or Panama railroad to any other division or department, the number of the house and room in which he is to be quartered at his new station will be obtained in advance by the division or department in which the employee is working, from the head of the division or department to which the employee is to be transferred, and four copies of Form C. E. 333 will be made out for each employee thus transferred. One copy will be mailed to the head of the division or department to which the employee is transferred; one copy will be mailed to the Examiner of Accounts, and one copy with necessary transportation, will be given to the employee, who will deliver the copy in person to the official to whom he has been instructed to report. The fourth copy will be retained in the files of the division or department from which the employee is transferred.

The same procedure will be followed in all cases where an employee of one division or department is temporarily loaned to another division or department. When an employee is sent to a temporary assignment the division or department in which he is employed will make out Form C. E. 333, and when the employee is returned the division or department that borrowed his services will make out Form C. E. 333.

Circulars Nos. 357, dated October 26, 1910, and 357-C, dated February 21, 1912 are hereby modified in so far as any of their provisions conflict with the above.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Acting Chief Sanitary Officer.

CULEBRA, C. Z., April 26, 1913.

CIRCULAR No. 484:

Effective this date, and during the absence of Colonel W. C. Gorgas, Colonel John L. Phillips is designated as Acting Chief Sanitary Officer.

GEO. W. GOETHALS, Chairman.

Employees' 120-Trip Tickets.

CULEBRA, C. Z., April 24, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

The holders of I. C. C. employees' 120-trip tickets will hereafter be required to fill in on coupons stations between which it is desired to travel and sign their names before entering train.

GEO. W. GOETHALS, Chairman.

Administrator's Notice.

In the Matter of the Estate of Leslie C. Cunningham—To any and all persons who may have a claim or claims, against the estate of Leslie C. Cunningham, deceased, who died at Pedro Miguel, Canal Zone, on January 31, 1913:

You will present the same on or before the 15th day of October, 1913, to the undersigned Administrator of said estate, properly verified, or the same will be forever barred according to law.

TOM M. COOKE, Administrator.

Married.

WRIGHTSON-GORGAS—On Wednesday evening, April 23, at St. Luke's Chapel, Ancon, Aileen Lyster Gorgas, daughter of Colonel and Mrs. William Crawford Gorgas, to Mr. William Dougherty Wrightson, Major Henry A. Brown, chaplain, Engineer Corps, U. S. A., officiating. Residence, Houston, Texas.

MOHRMAN-McGILL—At the Union Church, Cristobal, on April 17, Miss Mary McGill to Mr. Harry Mohrman, the Rev. Carl H. Elliott officiating. Isthmian residence, Colon.

Lost—Between Las Cascadas and Colon on April 19, an Elgin watch with fob attached. Fob has the monogram "T. B. R." A liberal reward is offered for its return to Thomas Rees, Las Cascadas.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal 8 a. m. to 12.30 p. m. and 2 to 7 p. m.
Balboa 8 a. m. to 12.30 p. m. and 2.30 to 7 p. m.
Ancon 8 a. m. to 1 p. m. and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m. and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning May 1, 1913:

FRESH MEATS.		Price.
Mutton—Stewing, per pound	6	
Shoulder, neck trimmed off (4 pounds and over), per pound	9	
Entire, forequarter (not trimmed, 10 pounds and over), per pound	8	
Leg (8 to 16 pounds), per pound	17	
Cutlets, per pound	18	
Short cut chops, per pound	20	
Lamb—Stewing, per pound	6	
Entire forequarter, neck trimmed off, per pound	9	
Legs (5 to 8 pounds), per pound	20	
Chops, per pound	24	
Cutlets, per pound	24	
Veal—Stewing, per pound	10	
Shoulder, for roasting (not under 4 pounds), per pound	12½	
Chops, shoulder, per pound	17	
Chops, per pound	26	
Loin for roasting, per pound	26	
Cutlets, per pound	30	
Pork—Loin chops or roast, per pound	17	
Beef—Suet, per pound	2	
Soup, per pound	5	
Stew, per pound	8	
Plate, per pound	9	
Corned, No. 1, per pound	14	
Corned, No. 2, per pound	12	
Chuck, roast, 3 lbs. and over, per pound	12	
Rib roast, second cut not under 3½ pounds, per pound	16	
Rib roast, first cut (not under 3 pounds) per pound	18	
Sirloin roast, per pound	19	
Rump roast, per pound	20	
Porterhouse roast, per pound	20	
Steak, Chuck, per pound	12½	
Round, per pound	18	
Rib, per pound	18	
Sirloin, per pound	19	
Rump, per pound	19	
Porterhouse, not less than 1½ pounds, per pound	26	
Tenderloin (Western) per pound	30	
MISCELLANEOUS.		
Livers—Beef, per pound	11	
Calf, each	66	
Half, each	30	
Steak, Hamburger, piece	13	
Sausage—Bologna, per pound	13	
Frankfurter, per pound	13	
Lieberwurst, per pound	13	
Devonshire Farm, per pound	20	
Swinehead, beef, per pound	40	
Eggs, fresh, dozen	25	
one-half dozen only	13	
Bluefish, per pound	15	
Halibut, fresh, per pound	15	
POULTRY AND GAME.		
Chicken—Fancy roasting, milk fed, large, each	1.40	
Fancy roasting, milk fed, med., each	1.10	
Fancy roasting, corn fed, about 5½ pounds, each	1.25	
Fancy roasting, corn fed, about 4½ pounds, each	1.00	
Fowls, each	76, 76, 80, 90	1.00
Ducks (Western, about 4½ pounds, each	1.25	
Broilers, milk fed, each	70	
Broilers, corn fed, each	60	
Turkeys, per pound	26	
Squabs, each	50	
Rabbits, skinned, each	30	
Ducks, blackhead, pair	60	
Partridges, pair	1.30	
Grouse, per pair	1.30	
Pheasants, per pair	1.30	
CURED AND PICKLED MEATS.		
Ham—Sugar cured, per pound	20	
Sliced, per pound	22	
Half, for boiling, per pound	21	
Boiled, per pound	28	
Hocks, per pound	18	
Beef, salt, family, per pound	12	
Bacon—Breakfast, whole piece, per pound	25	
Sliced, per pound	26	
Ham, lunch, per pound	32	
Pork, salt, family, per pound	14	
Ox tongues, each	1.00	
Pigs' feet, per pound	9	
Tongues, per pound	18	
DAIRY PRODUCTS		
Butter—Creamery, special, per pound	41	
Sheffield Farms, extra fancy, per lb.	46	
Cheese—Philadelphia, per pound	10	
Requeson, per pound	35	
Young Amstela, per pound	22	
Swiss, per pound	28	
Idam, each	1.00	
Parmesan, per pound	35	

Cheese—Gouda, per pound	34
Snappy, per cake	10
Milk (Certified), per bottle	**20
Fer-mil-lac, bottle	**20
Ice cream, quart	125
per gallon	150

VEGETABLES AND FRUITS.

Beets, per pound	3
Celery, per head	11
Cabbage, per pound	3
Cucumbers, per pound	14
Carrots, per pound	3
Lettuce	16
Onions, per pound	3
Potatoes, white, per pound	3
sweet, per pound	2
Parsnips, per pound	3½
Parsley, bunch	5
Squash, per pound	7
Turnips, per pound	3
Tomatoes	10
Apples, per pound	5
Grape fruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, Jamaica, per dozen	12

*Indicates reductions from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advances on last list.
††Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock, next lightest weight is supplied and refund note sent for difference.
‡Sold only from commissaries; no orders taken for delivery.

Rainfall from April 1 to April 26, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	.03	24	.03
Balboa.....	.05	26	.06
*Miraflores.....	.79	26	.79
Pedro Miguel.....	.50	24	1.04
Rio Grande.....	1.00	26	1.12
<i>Central Section</i>			
Culebra.....	.54	26	.71
*Camacho.....	1.12	25	2.13
Empire.....	.42	25	.82
Gamboa.....	.53	25	1.02
*Juan Mina.....	.39	26	.49
Alhuelma.....	.52	26	.64
*El Viga.....	.66	26	.97
*Gorgona.....	2.07	26	3.48
*Frijoles.....	1.41	25	2.05
*Monte Lirio.....	1.30	25	2.74
<i>Atlantic Section—</i>			
Gatun.....	2.06	15	4.57
*Brazos Brook.....	3.81	26	4.87
Colon.....	.89	26	1.26
Porto Bello.....	.53	24	1.53

*Standard rain gauge—readings at 5 p. m. daily.
Automatic rain gauge at unstarred stations—values midnight to midnight. †To 5 p. m., April 25.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending May 10, 1913 (75th meridian time):

DATE.	Low		High		Low	
	A. M.	A. M.	A. M.	P. M.	P. M.	P. M.
May 4	2.33	8.33	2.40	8.58		
May 5	3.07	9.10	3.12	9.33		
May 6	3.39	9.41	3.47	10.10		
May 7	4.13	10.22	4.21	10.46		
May 8	4.50	11.09	5.00	11.26		
May 9	5.28	11.42	5.40			
May 10	12.07	6.11	12.25	6.23		

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, April 26, 1913. All heights are in feet above mean sea level.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela	Gamboa	Gatun Lake.
Sun., April 20	125.4	91.3	48.9	48.8
Mon., April 21	125.4	91.2	48.8	48.8
Tues., April 22	125.4	91.2	48.9	48.8
Wed., April 23	125.4	91.2	48.9	48.8
Thurs., April 24	125.3	91.2	48.9	48.8
Fri., April 25	125.4	91.3	49.0	48.9
Sat., April 26	125.7	91.8	49.0	49.0
Height of low water to nearest foot	125.0	91.0	44.0	

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Panama	P. R. R. Friday	Apr. 25
Allianca	P. R. R. Thursday	May 1
Colon	P. R. R. Wednesday	May 7
Advance	P. R. R. Tuesday	May 13
Panama	P. R. R. Tuesday	May 20
Allianca	P. R. R. Monday	May 26

CRISTOBAL TO NEW YORK.

Advance	P. R. R. Thursday	May 1
Ancon	P. R. R. Friday	May 2
Panama	P. R. R. Wednesday	May 7
Allianca	P. R. R. Tuesday	May 13
Colon	P. R. R. Monday	May 19
Advance	P. R. R. Monday	May 26
Panama	P. R. R. Sunday	June 1
Allianca	P. R. R. Saturday	June 7

NEW YORK TO COLON.

Metapan	U. F. C. Wednesday	April 23
Trent	R. M. Saturday	April 26
Prinz August Wilhelm	H. A. Saturday	April 26
Zacapa	U. F. C. Wednesday	April 30
Emil L. Boas	H. A. Saturday	May 3
Sixaola	U. F. C. Saturday	May 3
Almirante	U. F. C. Wednesday	May 7
Prinz Joachim	H. A. Saturday	May 10
Carrillo	U. F. C. Saturday	May 10
Magdalena	R. M. Saturday	May 10
Santa Marta	U. F. C. Wednesday	May 14
Carl Schurz	H. A. Saturday	May 17
Pastores	U. F. C. Saturday	May 17
Metapan	U. F. C. Wednesday	May 21
Prinz August Wilhelm	H. A. Saturday	May 24
Tivives	U. F. C. Saturday	May 24
Tagus	R. M. Saturday	May 24
Zacapa	U. F. C. Wednesday	May 28
Emil L. Boas	H. A. Saturday	May 31
Sixaola	U. F. C. Saturday	May 31
Prinz Joachim	H. A. Saturday	June 7

COLON TO NEW YORK.

Santa Marta	U. F. C. Thursday	May 1
Pastores	U. F. C. Tuesday	May 6
Carl Schurz	H. A. Wednesday	May 7
Metapan	U. F. C. Thursday	May 8
Tagus	R. M. Tuesday	May 13
Tivives	U. F. C. Tuesday	May 13
Zacapa	U. F. C. Thursday	May 15
Sixaola	U. F. C. Tuesday	May 20
Emil L. Boas	H. A. Wednesday	May 21
Almirante	U. F. C. Thursday	May 22
Oruba	R. M. Tuesday	May 27
Prinz Joachim	H. A. Tuesday	May 27
Carrillo	U. F. C. Tuesday	May 27
Santa Marta	U. F. C. Thursday	May 29

NEW ORLEANS TO COLON.

Abangarez	U. F. C. Saturday	April 26
Heredia	U. F. C. Wednesday	April 30
Atenas	U. F. C. Saturday	May 3
Parismina	U. F. C. Wednesday	May 7
Turrialba	U. F. C. Saturday	May 10
Cartago	U. F. C. Wednesday	May 14
Abangarez	U. F. C. Saturday	May 17

COLON TO NEW ORLEANS.

Turrialba	U. F. C. Thursday	May 1
Cartago	U. F. C. Saturday	May 3
Abangarez	U. F. C. Thursday	May 8
Heredia	U. F. C. Saturday	May 10
Atenas	U. F. C. Thursday	May 15
Parismina	U. F. C. Saturday	May 17

Panama Railroad Steamship Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

Hamburg-American steamers for New York via Kingston and Santiago de Cuba, sail thus: The *Carl Schurz* and the *Emil L. Boas* on alternate Wednesdays at 10 a. m., and the *Prinz Joachim* and the *Prinz August Wilhelm* on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays, at 3 p. m.; ships for New York via Kingston, on Tuesdays, at 10 a. m. and Thursdays at 10 a. m.; for Bocas del Toro on Mondays at 5 p. m.; for Limon via Bocas del Toro, on Tuesdays at 5 p. m.; and for Limon direct, Tuesdays at 3 p. m.

The Panamanian Steamship Company's steamer *Panama* will sail from Panama for Aguadulce and Pedregal on May 8, 17, and 27.

The following ships arrived at, or departed from, the port of Balboa during the week ending April 26:

Arrivals—April 21, *Ucayali*, from Callao; April 23, *Acapulco*, from San Francisco; April 24, *Luckenbach*, from San Francisco; April 25, *Huasco*, from Valparaiso; April 24, *Cuzco*, from Puget Sound; April 25, *Barracouta*, from Central America.

Departures—April 21, *Chile*, to Guayaquil; April 21, *Mexico*, to Valparaiso; April 21, *Manana*, to intermediate ports; April 21, *Huallaga*, to Ilo, Peru.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

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Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Increased Activity of Cucaracha Slide.

That portion of the Cucaracha slide immediately north of Purple Hill, in spite of the dry weather, has shown greatly increased activity during the past few days, and on the night of May 2-3, had moved to such an extent as to cover the east track on the 70-foot berm, west bank of the Canal, leaving but a single passing track on this bench for all loads and empties to and from the south end of the Canal, and causing great congestion at this point.

When heavy rains come, the trouble from this slide will doubtless be increased considerably, but two 20-inch pipes have been laid, with their bottoms at elevation plus 37 feet, in a ditch cut into the solid rock bottom, passing in front of the entire slide. They will afford drainage to the south, even though covered to a depth of many feet by the slide itself.

Progress on New Colon Waterworks.

The construction of the purification plant, pump station, and accessory works in connection with the new water supply for Colon, Cristobal, and Mount Hope has been under way since October, 1912.

The tunnel between Brazos Brook and Gatun Lake has been completed; the gatehouse on the Gatun Lake side, together with the face and wing walls and the concrete plug closing up the tunnel, has been completed. The 20-inch pipeline from the gatehouse to the Gatun Lake control house has been laid. The control house at the end of this pipeline has been completed with the exception of the installation of the controller.

The pile foundations for the pump station and the pump sump beneath the floor of the station, and the walls of the station up to the level of the plates for the roof trestles have been completed.

The clear water basin under the filter building, the floor of the pipe gallery, and the walls of the filter building have been completed up to elevation 16.08, and the forms for the filter

beds on one side of the building have been erected ready for concrete.

The excavation for the sedimentation basin and the driving of the concrete piles beneath the west side of the basin have been completed. About 40 per cent of the floor of this basin has also been completed.

Work is in progress on the erection of the steel trestles for the pump station roof. The building of forms for the filter beds in the filter building, and the setting of the steel reinforcement for the walls and floor of the sedimentation basin are in progress.

A gravel washing and separating plant has been installed in Gatun and work is in progress washing and segregating into the three sizes required the gravel that will be necessary for the lower portions of the filter beds.

The 20-inch cast iron pipe for the new 20-inch main between Brazos Brook and the purification plant has been received and is being delivered along its location.

It is expected that unless delayed by non-receipt of material ordered in the United States, and the shortage of rock for concrete, that the entire plant will be ready for operation in October of this year.

Committee on Maintenance of the Canal.

In accordance with the resolution adopted by the Isthmian Canal Commission at its 163rd meeting, held April 24, 1913, the following members of the Commission were appointed by the Chairman and Chief Engineer a committee to investigate and recommend to the Commission plans for the maintenance of the Panama Canal: Lieut.-Col. D. D. Gaillard, Corps of Engineers, U. S. A., chairman; Lieut.-Col. Wm. L. Sibert, Corps of Engineers, U. S. A.; Colonel W. C. Gorgas, Medical Corps, U. S. A., and Mr. M. H. Thatcher, Head of the Department of Civil Administration.

Concrete Block Machines.

It is probable that hollow concrete blocks will be used extensively in the construction of the permanent buildings at the new Balboa town site. The blocks will be made on the Isthmus, and for that purpose, twelve special machines have been ordered from the United States. These include two machines for foundation blocks 12 by 12 by 24 inches; six for main wall blocks 8 by 12 by 12 inches; two for corner blocks 8 by 8 by 16 inches; one for partition blocks 4 by 12 by 12 inches, and one for interior columns 3 by 12 by 12 inches. In addition, two agitators for agitating the concrete before going into the block machines, are to be purchased.

Clearing Miraflores Lake Area.

In anticipation of the filling of the Miraflores Lake to the 55-foot level, a force of men is engaged in the removal of all brush between the 45 and 55-foot contours, and of all trees in the lake basin, the trunks or branch-

es of which pierce the surface of the water at the 55-foot level.

The clearing of this lake is for the purpose of the control of mosquito breeding that may be expected after the lake has reached its full height. Work similar to this was done some time ago in the Miraflores Lake area west of the Pedro Miguel Lock. The clearing of the Miraflores Lake area will extend from a point near the Cocoli spillway to some distance northeast of Pedro Miguel.

Effect of Wind Movement on Gatun Lake.

The effect of the wind movement on the water level of Gatun Lake has been observed during dry season months. In general, with the wind from the north or northeast at a velocity not exceeding 20 miles an hour, there has been a daily rise in the lake level at Gamboa of from one to two-tenths of a foot, reaching its maximum at from 2 to 4 p. m. There has been a similar rise, reaching a maximum earlier and less in amplitude, at the other lake stations, with the exception of Gatun, where the level decreases, the movement beginning in the middle of the forenoon. The lowering of the lake level at Gatun is barely half of the increase at Gamboa.

Railing for Spillway Dams.

Award has been made to the Vulcan Rail and Construction Company of Brooklyn, N. Y., for the railing for the approach and wing walls of the spillway dams at Gatun and Miraflores. The contract price is \$3,312, and delivery is to be made in 65 days. The approach wall on the upstream side of the Gatun spillway dam will require 970 lineal feet of railing; the wing walls on the downstream side will require 600 lineal feet, and the lower wings on the east and west walls at Miraflores spillway dam will require 500 lineal feet, a total of 2,070 lineal feet. The posts and railing are to be wrought iron pipe, manufactured from open hearth steel, galvanized inside and out, with fittings of malleable cast iron. The railing is to be two inches in diameter. Bolts and nuts are to be zinc coated according to the United States Sherardizing process, or similar. The posts will be spaced about 10 feet apart.

Immigration to the Isthmus During April.

According to the figures of the quarantine service, the number of persons who landed at the port of Colon from foreign ports during the month of April was 4,381, consisting of 1,343 cabin, and 3,038 steerage passengers. The number of persons who embarked for foreign ports during the same period was 3,477 consisting of 1,867 cabin, and 1,601 steerage passengers. The number of persons who landed over those who embarked was 904. Two thousand five hundred and forty-six of the persons arriving in steerage were from

Jamaica and the West Indies; 196 were from Costa Rica, and 133 from Colombia.

The passengers arriving "in transit," consisting principally of tourists, numbered 3,331, as compared with 5,827 in March. Of the 103 vessels arriving at Colon during April, five were exclusively for tourists, and carried a total of 921. The month of May will probably show a marked decrease in tourist travel, as but one special steamer is scheduled to arrive. On April 26, there arrived from Bridgetown, Barbados, the schooner *Meteor*, having 136 passengers on board. The trip was made in 13½ days, with a stop at Curaçao.

The number of persons who landed at the ports of Panama and Ancon during the month of April from foreign ports was 723, consisting of 554 cabin, and 169 steerage passengers. The number of persons who embarked for foreign ports was 486, consisting of 365 cabin, and 121 steerage passengers. The number of persons who landed over those who embarked was 237. The net immigration to the Isthmus during April was 1,141.

Laborers Killed by Slide.

Four West Indian laborers were buried under a slide which occurred in the bank while they were excavating for a culvert near

mile post 37 on the Gold Hill cut-off of the Panama railroad line at about 10.35 a. m., Tuesday, May 6. Life was extinct when the bodies were reached. The names of the men were: William Smith, Jamaican, check No. 79018, living at Matachin; Robert Robinson, Jamaican, check No. 79004, living at Matachin; David Picton, Jamaican, check No. 79003 living at Panama, and William Noel, Martiniquan, check No. 79013, living at Panama.

Sunday Engagements with the Chairman.

Employees having business with the Chairman may call at his office between 7.30 and 10.30 o'clock each Sunday morning. Employees should, therefore, reach Culebra on the north or south-bound train, due to arrive at 7.33 and 8.37 a. m., respectively.

Boston Business Men Visit Canal.

A party of Boston business men, members of the Chamber of Commerce, and others, with Mayor John E. Fitzgerald, arrived on the Isthmus on the *Melapan* on Friday, May 2. Mayor Fitzgerald and his own party spent one day here and then continued on the *Melapan* on a trip to Santa Marta. The remainder of the visitors were taken over the Canal and on Sunday, were given a trip in the bay on the steamer *Panama* of the Panama Steamship Company, by the merchants of the city. Most of the party sailed on the *Guatemala* of the Pacific Steam Navigation Company's service on Monday, May 5, on a trip to points along the west coast of South America.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending May 3:

DATE.	Hours worked.	Cubic yards.
April 28.....	7.10	2,371
April 29.....	7.20	2,502
April 30.....	7.00	2,497
May 1.....	6.35	2,226
May 2.....	7.15	1,882
May 3.....	7.20	2,303
Total.....	42.40	13,781

Missing Man.

Any one having information regarding the whereabouts of William Alexander Simpson of Amboy, Ill., formerly a corporal of the 93d U. S. Coast Artillery Corps, Fort Stevens, Oreg., who is supposed to be on the Isthmus, is requested to communicate with the American Legation, Panama.

CONCRETE WORK IN THE LOCKS AND SPILLWAYS.

About 99 per cent of the entire quantity of concrete to be placed in the locks and spillways had been laid at the close of work on May 3, the amount in place being 4,696.463 cubic yards.

GATUN LOCKS AND SPILLWAY.

Over 99 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on May 3, being 2,025,623 cubic yards, out of a total of 2,043,730. In the spillway of Gatun Dam there had been placed 225,432 cubic yards, about 99 per cent of the total amount. A statement of the amount placed each working day of the week ending May 3, and of the total, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			Large stone.	Total.	SPILLWAY.		
	Concrete placed.	Hours worked.	No. of mixers.			Concrete laid.	Hours worked.	No. mixers used.
	Cu. Yds.					Cu. Yds.		
April 28.....	948	15.80	4	.....	948	32	2.00	1
April 29.....	846	12.84	4	.....	846	52	4.00	2
April 30.....	770	12.84	2	.....	770	24	1.50	1
May 1.....	684	11.40	2	.....	684	54	3.75	1
May 2.....	704	11.74	2	.....	704	110	3.75	1
May 3.....	608	10.14	2	.....	608	33	2.50	1
Total.....	4,560	74.76	2.6	.....	4,560	305	17.50	1.1
Previously reported.....	.....	.....	.....	.....	2,021,063	225 127	.....	.....
Grand total.....	.....	.....	.....	.....	2,025,623	225,432	.....	.....

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is almost completed, 920,159 cubic yards having been placed at the close of work on May 3, out of a total of 920,556. The record for each working day of last week, follows:

DATE.	AUXILIARY PLANT.						Mixed by hand	Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.					
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers			
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.	Cu. Yds.
April 28							18		18
April 29							16		16
April 30				27	3.00	1	12		39
May 1				62	6.00	1	22		84
May 2							24		24
May 3							19		19
Total				89	9 00	.33	111		200
Previously reported								4,493	919,959
Grand total								4,493	920,159

MIRAFLORES LOCKS AND SPILLWAY.

Over 99 per cent of the concrete for the system of three twin locks at Miraflores was in place on May 3, the total amount on that date being 1,498,286 cubic yards, bucket measurement, out of a total of 1,501,993. At the spillway, 26,963 cubic yards were in place. The record for each day worked last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. ½-cubic yard mixers.			Mixed by hand.	Large stone.	Total.	SPILLWAY.						Total.
										CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 1-cubic yard mixers.			
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers				Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	
April 28	Cu. Yds. 342	13.33	6	Cu Yds.			Cu. Yds.	Cu Yds.	Cu. Yds. 342	Cu. Yds. 100	See time under locks.		Cu. Yds. 158	7.50	2	Cu. Yds. 258
April 29	444	13.00	6						444				104	4.00	2	104
April 30	56	2.00	6						56	32			203	10.00	2	235
May 1	224	9.00	6						224	60			76	4.00	1	136
May 2	340	9.00	6						340	36			248	14.00	2	284
May 3	160	6.00	4						160	10		270	14.00	2	280	
Total	1,566	52.33	5.67						1,566							1,297
Prev'ly reported									3,693	1,496,720			1,059	53.50	1.67	25,666
Grand total									3,693	1,498,286						26,963

SOCIAL LIFE OF THE ZONE.

Church Notes.

On Saturday afternoon, May 3, the congregation of the Methodist Episcopal Church, Panama, held a reception in the parsonage in honor of Bishop Homer C. Stuntz, and Mrs. Stuntz. During the afternoon, Miss Elsie Wood, directress of the mission school of the Woman's Foreign Missionary Society of the Methodist church in Lima, Peru, gave an informal address on her work.

The Methodist church is to erect a new chapel in Guachapali for the negro congregation. It will be a frame structure, with a seating capacity of about 150, and is designed to meet the needs of the growing congregation in that part of Panama.

Bishop Stuntz is developing a plan for the erection of a schoolbuilding for the mission school in connection with the church in Panama. It is proposed to erect a two-story concrete structure. A staff of teachers will be sent from the United States, and the instruction will be in accordance with the best system for secondary schools.

The mission school in the seawall Methodist Church was opened on Monday, May 5, with an enrollment of 63 pupils. During the past year, which closed in February, the Ladies' Aid Society of the church supported eight scholarships, and others were maintained by the Las Cascadas Sunday school, the Ladies' Auxiliary of the Empire Christian League, Empire, and one individual subscriber from Gorgona. A scholarship costs \$25, United States currency.

The ladies' auxiliary to the Empire Christian League will hold an election of officers at its meeting on Friday, June 6. At this meeting the text book on Mormonism will be completed.

On Monday, May 5, Bishop Stuntz was the guest of the Isthmian Ministers' Association at the monthly meeting held in the Commission chapel at Empire, and delivered the principal address of the afternoon. The bishop sailed for New York on the steamer *Panama* on Wednesday, May 7. During

his visit to the church in Panama he preached every evening at the seawall church, beginning on Tuesday, April 29, and at the morning and evening services on Sunday, finishing his work with a lecture on the Philippines, on Monday evening, May 5.

The Empire Sunday school is preparing to celebrate Children's Day, which occurs in June.

At the invitation of the Woman's Guild of St. Luke's Hospital Chapel, Miss Wood spoke before the members and their friends in the church on Wednesday morning, May 7, her subject being her work in Lima.

Miscellaneous Notes.

The regular dance of the Cristobal Dancing Club will be held Saturday, May 10, 1913, at the Commission clubhouse. Invitation or membership card must be presented at door.

A dance was held at the Strangers Club on Thursday evening, May 1. A special dinner, with music, is announced for Sunday evening, May 11.

The Catholic Club at Gorgona held a farewell dance in the Commission clubhouse on Saturday evening, April 26.

Annual Dinner of 1904 Men.

The sixth annual dinner of the members of the Society of the Incas, composed exclusively of Canal employees, and others, whose term of service with the Canal Commission began during the year 1904, was held at the Hotel Tivoli on Saturday evening, May 3. The dinner, as usual, was in honor of the anniversary of the taking over of the French canal property by the United States Government, which occurred on May 4, 1904. It was attended by 44 of the 1904 men now on the Isthmus, of which there are approximately 60. Col. Tom M. Cooke presided. The general design for a society button, or pin, as individual members may wish, was adopted. It will be in white, green and gold, and will show a map of the North and South American continents drawn to scale, with the year "1904" across the face. On the reverse side there will be the words "Society of the Incas," and "Panama Canal,"

with space left for the owner's name. They will be made at Tiffany's. Col. Cooke was authorized to appoint a committee of five to confer with Colonel Goethals with the view of procuring his consent to allow the 1904 men then remaining on the Isthmus the privilege of passing through the Canal on the first ship. The committee consists of Judge H. A. Gudger, chairman; A. B. Nichols, J. J. Meehan, M. B. Connolly, and Dr. A. B. Herrick. The members present at the dinner were: Col. Tom M. Cooke, Judge H. A. Gudger, Judge M. C. Rerdell, Dr. A. B. Herrick, Dr. J. C. Perry, Dr. Claude C. Pierce, A. B. Nichols, R. H. Wardlaw, J. M. Sinclair, M. C. Pratt, E. C. McFarland, George W. Wosnon, J. J. Reidy, C. L. Stockelberg, Numa Nunn, C. C. J. Wirz, D. W. Dennis, Henry Anderson, R. K. Vibert, Charles D. Hummer, M. B. Connolly, Charles L. Parker, George Buchan, D. F. Donahue, William Bodette, J. S. Kirk, Frank Loulan, Mark W. Tenny, A. S. Jussen, R. W. Unckles, O. S. Boyd, A. A. Lundishef, J. J. Meehan, A. C. Griggs, Frank E. Moore, Max Herz, Phil M. Bates, W. C. Haskins, Monroe L. Padgett, Hartley Rowe, George M. Wells, R. P. Dixon, Dan E. Wright, H. P. Warren.

Obituary.

The death of Lieut.-Col. Wendell Lee Simpson, U. S. A., retired, general purchasing agent of the Panama Railroad Company, with headquarters at New York, occurred on April 23, at his home at Garden City, L. I. He was born in New York on August 10, 1859, graduated from West Point with the class of 1884; served in the Cuban campaign in the Spanish-American War, and also in the Philippines, and was retired from active service on September 7, 1912. He is survived by his wife, a son, and a daughter.

Owing to the prospective abandonment of the Gorgona shops, and on account of the small stock of spare repair parts now on the Isthmus requisitions have been forwarded to the United States for purchase of a quantity of these parts for early shipment.

CANAL MEDAL LIST.

(Concluded.)

On the following list are the names of American employees of the Isthmian Canal Commission, who have completed two years of continuous service on the Isthmus during the twelve months ending December 31, 1912, and are in consequence entitled to receive a Canal medal. The date shown opposite each name is that from which medal service is computed.

The list is published in order that it may be carefully checked by those interested. Any omissions, errors in spelling of names, or in the dates from which service is reckoned, should be promptly reported to the Office of the Chairman for correction.

A list covering employees of the Panama railroad, and the bar lists for both I. C. C. and P. R. R. employees, will appear in later issues.

Heads of divisions are requested to check carefully their lists of American employees on the silver roll, and to report any omissions on the medal or bar lists to this office.

Name.	Date.	Name.	Date.	Name.	Date.	Name.	Date.	Name.	Date.
Williams, James L....	Nov. 22	Taber, Jean H.....	Nov. 28	Tilley, George L....	Dec. 1	Klein, Nicholas J....	Dec. 12	Allen, Harry H.....	Dec. 22
Falkner, Sidney R....	Nov. 23	Wallace, James T....	Nov. 28	Wright, George E....	Dec. 1	Starbuck, Herbert A.	Dec. 12	Arbuckle, Evelyn O...	Dec. 22
Hogan, Charles W....	Nov. 23	White, William J....	Nov. 28	Cummings, Joseph J.	Dec. 2	Vance, George E....	Dec. 12	Bechlem, Alfred W....	Dec. 22
Lyons, Michael F....	Nov. 23	Williams, George F....	Nov. 28	Brown, Claude W....	Dec. 4	Witmer, John R....	Dec. 12	Bunker, Edmund C...	Dec. 22
Geiger, Joseph F....	Nov. 24	Wyatt, James L....	Nov. 28	Hall, Willis.....	Dec. 4	Cammack, George E..	Dec. 14	Garrett, William S...	Dec. 22
McCain, Fay H.....	Nov. 24	Welch, James E....	Nov. 29	Manley, George W....	Dec. 4	Brown, Fred W....	Dec. 15	Gaynor, John J.....	Dec. 22
White, Clarence A....	Nov. 24	Allison, Edward....	Nov. 30	Gordon, Cecil A....	Dec. 5	Purdy, Charles O....	Dec. 15	Johnston, Francis L..	Dec. 22
Fuller, Robert L....	Nov. 25	Buser, Fred H.....	Nov. 30	Junker, Ludwig.....	Dec. 5	Claiborne, Herbert		Jones, Walter D.....	Dec. 22
King, Benjamin B....	Nov. 26	Dunn, Oscar D.....	Nov. 30	Meister, Daniel J....	Dec. 7	A., Jr.....	Dec. 16	Howard, Orville B...	Dec. 24
Vierbuchen, Carl E...	Nov. 26	Bender, Charles J....	Dec. 1	Coates, Edward F....	Dec. 8	Cunningham, J. E...	Dec. 16	Potter, Hubert L....	Dec. 24
Arehart, George W....	Nov. 28	Carlton, Olaf D....	Dec. 1	Cushing, R. E. Lee...	Dec. 10	Erickson, Ida O....	Dec. 16	Bartholomew, Wm. H.	Dec. 28
Auer, George H.....	Nov. 28	Garlington, Albert C.	Dec. 1	Dunlap, Jennie M....	Dec. 10	Smith, Bryce A....	Dec. 16	Bronson, Howard F...	Dec. 28
Buntin, John.....	Nov. 28	Hale, John R.....	Dec. 1	Ebtinger, Emil.....	Dec. 10	Stevens, Sherlock E..	Dec. 16	Nadler, Charles H...	Dec. 28
Gill, George G.....	Nov. 28	Henderson, David J..	Dec. 1	Garrison, Alfred S...	Dec. 10	Sheedy, Charles H...	Dec. 19	Brown, Allan S.....	Dec. 29
Grunig, Alfred C....	Nov. 28	Hoffman, Raymond J.	Dec. 1	Walcutt, Delano B...	Dec. 10	Wilkingstad, Knut...	Dec. 19	Maxwell, Fred B....	Dec. 29
Hepler, Howard H....	Nov. 28	Hyder, Frank.....	Dec. 1	Wood, George F....	Dec. 10	Dennis, Sylvester P.	Dec. 20	Terry, Edward.....	Dec. 29
Kultoniack, Joseph P.	Nov. 28	Neeson, Thomas.....	Dec. 1	Bentley, James E....	Dec. 12	Moran, Patrick C....	Dec. 20	Owen, Willis A.....	Dec. 30
Owens, Herbert J....	Nov. 28	Prather, Harry L....	Dec. 1	Gebhardt, Charles...	Dec. 12	Wykoff, Edward....	Dec. 20	Galvin, Evelyn.....	Dec. 31

NINE YEARS OF CANAL WORK.

Review of Operations from May 1 to May 1—
Present Status.

The transfer of the French canal property to the United States Government took place on May 4, 1904. Although this date formally signalizes the beginning of Canal operations under American supervision, the first three years were chiefly devoted to the sanitation of the Isthmus, to assembling a working force and providing them with quarters and places of subsistence; and in various other ways preparing for the actual period of construction. The beginning of the tenth year of operations finds the constructive features of the Canal work in the final stages of completion. Concrete work in the locks has advanced to the point where its termination can be clearly prefigured; work is in progress on all of the 46 lock gates and their erection is over 90 per cent completed; installation of the lock machinery is well under way; the removal of all original excavation from the Canal prism, both wet and dry, is a matter of months; and plans for most of the auxiliary features connected with the operation of the finished Canal have been decided upon, and the work on some of them, as well as on terminal facilities, has been begun. Several reorganizations and consolidations have been effected during the year, notably in the Department of Construction and Engineering by which the Pacific Division was abolished and the work of that division assigned to the Second Division, and to the Fifth and Sixth Divisions, newly created. Consolidations have been effected in the timekeeping forces, and in the dredging work of the Atlantic and Sixth Divisions.

According to present plans, Gatun Lake, now practically stationary at about 49 feet, will be allowed to fill after July 1, until it has reached its normal level of 85 feet, which event, in case there is a season of average rainfall, is expected to take place about December 1. The rise in the lake level will probably flood Culebra Cut shortly after October 1, causing a suspension of steamshovel operations near that date. The work of removing the two remaining villages that will be cut off by the filling of Gatun Lake—Gorgona and Matadin—will probably be completed early in September. The work of dismantling the married quarters at Gorgona is already under way, and the removal of the bachelor quarters and miscellaneous buildings will be begun about August 1. Fifty-seven of these buildings will be erected at Corozal, which will be the home of many of the workers on the Pacific side until the permanent quarters at the new Balboa townsite are ready for occupancy.

LOCK CONCRETE WORK.

According to the table printed on Page 306 the amount of concrete remaining to be laid in the locks of the Canal is less than 26,000 cubic yards divided, as follows: Gatun Locks, about 20,103 cubic yards; Pedro Miguel Lock, 723 cubic yards, and Miraflores Locks, 4,431 cubic yards. All of the concrete at Gatun Locks is in place, with the exception of the north approach wall. The concrete work at Miraflores Locks will be finished by May 15, while the work at Pedro Miguel Lock is practically completed, with the exception of a gap in the northeast wing wall to allow Central Division construction trains to pass through, and a section at the north end where the caisson sill and the chain fender slot cross the drainage ditch. Concrete construc-

tion at Gatun Locks was begun on August 24, 1909, and up to May 1, 2,023,627 cubic yards had been laid out of a total of 2,043,730 cubic yards. The work at Pedro Miguel was begun on September 1, 1909, and up to May 1, a total of 920,032 cubic yards had been laid, out of a total of 920,556. Laying of concrete in Miraflores Locks was begun in February, 1910, and up to May 1, 1,497,562 cubic yards had been placed out of a total of 1,501,993 cubic yards.

LOCK GATES.

Considerable progress was made during the year in the erection of the lock gates. All of the material for the 92 leaves has been completed and shipped, except the nickel steel bearing plates for four leaves. The work of erection was begun in June, 1911, at Gatun Locks, and on May 1, the status of erection at all of the locks was, as follows: Gatun, 95.4 per cent completed; Pedro Miguel, 95 per cent completed; Miraflores, 78.6 per cent completed.

WATER CONTROL VALVES.

Eighty-six of the 116 rising stem gate valves that will control the flow of water into the lock chambers had been placed on May 1, and 63 of the machines for operating these valves had been installed on the same date. Of the 120 cylindrical valve machines for controlling the flow of water from the center wall culverts into the lock chambers, 109 were in place on May 1. Of the 12 auxiliary culvert valve machines, four each at Gatun, Pedro Miguel, and Miraflores, installation has been completed at Gatun and Pedro Miguel, and one machine placed at Miraflores, at the close of April.

GATE OPERATING MACHINERY.

Of the 92 miter gate moving machines, eight had been installed (mechanical work only) on May 1, six at Gatun Locks, and two at Pedro Miguel Lock. Of the 46 miter forcing machines, one only had been installed on May 1, namely, on gates Nos. 37 and 38, in the east chamber at Gatun Locks. The installation of the motors and other electrical apparatus in connection with the gate operating machinery is in progress. Concrete work on the control house at Gatun has been begun. The equipment has been installed in two transformer rooms.

EMERGENCY DAMS.

The erection of the structural steel in connection with four of the emergency dams, placed in the forebay above the upper locks of each flight, is under way, one each on the east and west walls at Gatun Locks, and one each on the east and west walls at Pedro Miguel Lock. The east emergency dam at Gatun was closed across the lock chamber on Saturday, May 3. No work has yet been done on the two dams of this type at Miraflores Locks.

CHAIN FENDERS.

A practical test was made of the first of the 24 chain fenders in March, with satisfactory results. The tests were continued during April. These fenders are designed to be stretched across the locks, when required, to prevent damage to the gates by possible ramming of vessels.

TOWING LOCOMOTIVES.

Tests have been conducted, beginning in February, with sample towing locomotive, No. 640, at Gatun Locks. The contract for the

40 locomotives, dependent on the success of the one on trial, has not yet been awarded. During the tests conducted in April, the machine traveled 574.12 miles, 45.2 miles on the return track and 528.92 miles on the towing track. The maximum load carried was 22,550 pounds.

AIDS TO NAVIGATION.

From May 1, 1912 to May 1, 1913, the following work was done by the Lighthouse subdivision:

Range towers Nos. 1, 2, 3, 5, 7, 9, 11, 15, 16, 17, and 18, Gatun Lake section, were practically completed; beacons Nos. 5, 7, and 8, Pacific Division, were completed; fourteen reference targets in Gatun Lake were completed; the reinforced caisson foundation for the West Breakwater light was built up to a height of 25 feet; the reinforced concrete spiral stairways for range towers were cast at the Balboa plant of the Lighthouse subdivision, as were also 16 concrete beacons, and 35 roofs for beacons. There were also cast at the same plant 224 concrete sinkers for gas and spar buoys.

Two and one-half miles of electric light line from Aguadulce pumping station to range No. 1-2, Pacific Division, were constructed; and electric lights installed in range No. 1-2, and Beacons Nos. 5, 7, and 8. Electric lights were also installed in range No. 5-6, Atlantic Division.

Award was made in the United States for the construction of 57 gas buoys, 30 of which have been delivered on the Isthmus. Six of these buoys have been placed on their stations at the Pacific entrance to the Canal.

Surveys and reconnaissances have been made in the Gatun Lake region in connection with the construction of range towers, beacons, and reference targets.

DAMS AND SPILLWAYS.

The hydraulic fill of Gatun Dam, the artificial barrier that, stretching across the old valley of the Chagres River, impounds the water of Gatun Lake, eventually 164 square miles in extent, was begun in March, 1909, and completed in September, 1912. The fill was made by suction dredges pumping from nearby borrow pits, and amounts to 10,124,082 cubic yards. The dry fill of the dam was begun in 1907, and has continued to the present time, 11,385,362 cubic yards being in place on May 1. On that date the dry fill, exclusive of paving, was approximately 98 per cent completed. The work of paving the lake side of the dam for a distance of 10 feet above and below the normal level of the water, 85 feet above sealevel, is in progress. About 175,000 cubic yards will be required for this purpose. Dumping of dry fill for the west dams at Pedro Miguel and Miraflores is practically completed, the totals in place on May 1, being 692,878, and 1,635,629 cubic yards, respectively. The hydraulic fill of the west dam at Miraflores was accomplished by the hydraulic excavation equipment of the Pacific Division, and amounts to 661,048 cubic yards. It was completed about December 1, 1912.

Concrete work in the spillway of Gatun Dam is nearly completed, 225,235 cubic yards, being in place on May 1. At Miraflores spillway, excavation for the foundations is about finished, and approximately 25 per cent of the concrete has been placed. Of the 22 spillway gate machines, 14 at Gatun,

and eight at Miraflores, only one had been installed up to May 1, namely, at Gatun.

HYDROELECTRIC PLANT.

Excavation for the foundations of the hydroelectric station at Gatun spillway, which will generate electricity for all of the operating machinery and lights of the Canal, is practically completed. The erection of the three penstocks was about 95 per cent completed on May 1. All of the turbogenerator sub-foundations are in place, three water turbines have been installed, and the erection of the turbogenerators is about 45 per cent completed. All of the structural steel for the station building has been received. A full description of the plant is given in THE CANAL RECORD of July 3, 1912.

TRANSMISSION LINE.

All line construction material for the Cristobal-Balboa electric transmission line is now under contract, with deliveries promised in about four months. It is expected to award contract for the substation equipment shortly. Construction work on foundations has been started at New Culebra Siding.

EXCAVATION.

The greater part of the material remaining to be excavated from the Canal in the dry is confined to a section of Culebra Cut extending from Cucaracha slide to a point south of the Empire suspension bridge, a total distance of about 9,000 feet. Of the 6,633,400 cubic yards remaining to be removed in the entire Culebra Cut section on May 1, only about 1,500,000 cubic yards come under the head of original excavation. The remainder was brought in by slides, which were again active during the year. Cucaracha slide, which first developed in 1907, and afterward became inactive, was the scene of a new movement in December, 1912, which has continued to a greater or less extent up to the present time, although the steamshovels now concentrated at that point are making headway against it. A new movement also developed on February 5 in the slide on the east bank, opposite Culebra village, and additional movements have been recurring there. Blasting operations in the Cut will probably be concluded within about three months' time, and this may diminish the danger from slides to some extent. The work of terracing the east and west banks of the Canal, north of Gold Hill and Contractor's Hill, to lessen their weight, has continued uninterruptedly. The increased activity on the part of slides made necessary a revised estimate of excavation, and in February, 1913, 5,634,161 cubic yards were added to the total, making the estimate for Culebra Cut 99,516,817 cubic yards, and for the the entire Canal 218,138,299 cubic yards. The excavation in the Culebra Cut section, by years, follows:

May 1 to May 1	Cubic Yards.
1904-05.....	648,911
1905-06.....	1,250,570
1906-07.....	4,861,895
1907-08.....	11,285,217
1908-09.....	13,955,753
1909-10.....	14,886,427
1910-11.....	15,925,976
1911-12.....	16,448,513
1912-13.....	13,762,255
Total.....	93,025,517

In the Chagres section there remain to be removed about 300,000 cubic yards, consisting principally of silt brought down by the Chagres River. This work will be done by dredges after the water has been turned into the Cut.

Dry excavation in the Canal prism, outside of the Culebra Cut section, is confined to 875,553 cubic yards in the Fifth Division, principally between Pedro Miguel and Miraflores Locks, and south of Miraflores Locks to the limit of dredging operations marked by the north dike. It is expected that all steamshovel excavation in the Fifth Division will be completed by August 15.

The work by dredges in the entrances to the Canal is approaching completion. In the Pacific entrance, there is an open water channel extending from Station 2145 to Station 2260. This channel carries a depth of plus 40 feet at mean tide, at the present time, with a few rock shoals to be removed to bring it to grade. From Station 2145 to deep sea Station 2500, a distance of 36,500 feet, the Canal is excavated down to and below grade, thus permitting the navigation of vessels drawing 40 feet of water to the dam at Station 2145, from deep sea. Dredges will be set at work shortly in the section between the dikes, immediately below Miraflores Locks, where approximately 1,400,000 cubic yards of rock are to be taken out.

On the Atlantic side, the dredges are nearing the lower approach to Gatun Locks, and on May 1, there were 35 feet of water in the channel to mile post 5 plus 2,200 feet, except one shoal at west point of bank at mile post 4 plus 2,500 feet. There are 26 feet of water over this shoal. The navigable channel now extends to within 2,100 feet of Gatun Locks. A consolidation of all the dredging operations on the Canal was made on May 1, and Mr. W. G. Comber, resident engineer, Sixth Division, was placed in charge. A plan of operation under the new arrangement is being worked out.

Two new 15-cubic yard dipper dredges, capable of digging to a depth of 50 feet below the surface of the water, were contracted for on January 13, 1913. A description of these dredges was given in THE CANAL RECORD of February 5, 1913.

BREAKWATERS.

The trestle, 3.29 miles long, connecting Naos Island with the mainland at East Balboa, was finished on November 6, when rail communication with the island was established. Dumping on the embankment fill is proceeding at the rate of about 12 trainloads a day. Under the order of preference recently adopted in the matter of making fills with material available to October 1, the breakwater fill is placed second in importance, that of the new Pedro Miguel townsite being first. The breakwater, according to present plans, will be built as far as practicable above high tide, with sufficient width at the top for a railway track and single roadway. The dike will be armored for most of its length to resist wave action.

The trestle on the west breakwater extending out from Toro Point, in Limon Bay, was completed on January 1, 1913, and has a total length of 11,526 feet. The work of armoring both sides of the breakwater with hard rock obtained from Porto Bello, large pieces on the outside, and smaller ones on the inside, is in progress. It is estimated that about 800,000 cubic yards of hard rock will be required for the purpose, and up to May 1, 209,442 cubic yards had been placed.

PERMANENT WATER SUPPLY.

Plans for a permanent water supply on the Pacific side were approved in March, 1913. They contemplate the continued use of the

Rio Grande reservoir, with an increase in its capacity procured by raising the dam 27 feet above its present crest; also, the continued use of the Camacho reservoir at Empire by laying a pipeline from it to the Rio Grande reservoir, and by pumping water into the supply mains from Gatun Lake, just north of the entrance to Pedro Miguel Lock, with the installation of a new pumping station, purification plant, and accessories nearby. An additional 1,500,000-gallon high pressure reservoir will be built on Ancon Hill. All plans for the permanent water supply are based on an ultimate consumption of at least 12,000,000 gallons daily in the villages and industrial plants on the Pacific slope.

The water supply plans on the Atlantic side contemplate the continued use of Agua Clara reservoir at Gatun to serve the permanent village near the locks, and of Brazos Brook reservoir to supply Colon and Cristobal, with provision for an auxiliary supply by piping water into the reservoir from Gatun Lake. A new waterworks plant is under construction at Mount Hope, and progress thereon is set forth in an article in another part of this issue.

TERMINAL FACILITIES.

The construction of the permanent terminals at the Pacific end of the Canal was begun with the removal of the Commission village of Balboa, and the remnants of the native village of La Boca, in June and July of 1912. Excavation was begun near the northeastern limit of the village sites in July, and has proceeded southward, cutting into Sosa Hills to make a wide, level site for shops, etc. Following the completion of excavation along Sosa High, the macadam highway was rebuilt at the base of the bluff, and the Balboa line of the Panama railroad was shifted into the area of excavation, east of its former location, in order to clear the site of the large drydock, No. 1. The dispensary was relocated at the foot of the hill, the postoffice was moved to the east side of the hill, toward the Balboa commissary store, and only the necessary shops, storehouses and office buildings were left on the the former village site.

Excavation for drydock No. 1 and its entrance slip began on January 1. Up to May 1, 107,495 cubic yards, or about eight per cent of the total, had been removed. The drydock entrance slip will extend beyond the present shore line, and the construction of a large cofferdam to permit of excavation in the dry, was begun in April, 1913. The building of the cofferdam necessitated the transfer of the dredge landing and the construction of a new coal pocket for supplying vessels. They have been located just north of the steel pier, on the site occupied by the wharf which collapsed on August 17, 1912.

Work on the quay walls and the one new pier authorized to date has included the sinking of over 28 per cent of the six-foot concrete caissons. The overwater parts of these structures will be supported on steel caissons, none of which has been sunk to date. A completed section of the 55-foot quay wall, 656 feet long, was placed in commercial service on July 13.

Construction work accomplished to date on the permanent shops includes the driving of foundation piles for all the footings under buildings Nos. 5, 6, 8, and 10, and of those footings for buildings Nos. 1, 2, 3, 4, 9, 11, and 12 which will be on piles. The remaining

footings will be in nearly all cases concrete piers sunk to rock. Erection of steel framework for the planing mill, building No. 8, has been begun by the United States Steel Products Company, which has the contract for the fabrication and erection of all superstructure steel for the Balboa terminal buildings. Roofing for these buildings is being manufactured at Paraiso by the American Cement Tile Manufacturing Company.

Spoil from the excavation at the foot of the hills and in the drydock has been used to raise the level of the townsite, and to provide new yards for the Panama railroad. A part of the quay wall and the foot of the new pier will lie adjacent to the east toe of the abandoned Sosa dam. Dumps have been made east of this toe for permanent yards, and some of the

construction and storage tracks required in the terminal work have been so laid out that they may be left for commercial use.

Dry filling of the swamp between Sosa and Ancon Hills was completed during the year, and supplemented by spoil from pipeline suction dredge, deposited in January and February. The residential section of the permanent town will occupy this site in part, and plans are being prepared for its construction. Work on the permanent administration building was begun in February, 1913, when a steamshovel began cutting away the top of the hill which the building will occupy, north of the Ancon cemetery, and overlooking the townsite. The excavation is almost completed. Contract for the steel work for the building has been awarded,

and the architectural details are being worked out.

Award of contract has been authorized for the building of two 250-ton revolving floating cranes, for use in handling cargo and general wrecking service in the Canal and at the terminals. Award has been made for materials for four 40,000-barrel steel tanks for fuel oil, two of which will be erected on the south side of Sosa Hills, on the fill in rear of the steel pier. Proposals for furnishing the machinery for the coaling plants at the ends of the Canal, will be opened June 14.

An outline has been made of the policy to be pursued by the Government with regard to private coal and fuel oil depots on the Isthmus for the purpose of supplying ships passing through the Canal, and since its publication, a number of inquiries have been received with reference to the establishment of such depots.

The work on the terminal facilities at Cristobal has followed the plans outlined in 1911, which were pursued with only slight variations during the year 1912. The mole from which the piers will jut has been extended 3,085 feet from the shore line. The wharf on the southwest side of Cristobal point, known as Dock 16, was placed in commercial use in January, 1913. Paving the floor with Purinton brick is in process, 9,106 square yards having been laid to May 1. Columns for the shed are being erected; 229,280 pounds of steel superstructure are in place.

For the one authorized pier, No. 17, jutting from the mole, 18,182 lineal feet of 6-foot concrete caissons have been driven, and filled with 20,531 cubic yards of concrete. The steel beams, girders, and reinforcements for the floor, amounting to 8,383,222 pounds, are in place, and the floor will be completed in June.

Caissons, four feet in diameter, have been driven during the past year for Dock 15, which will extend from the outer end of Dock 16 back along the outer side of Cristobal Point. Concrete placed in the caissons to date amounts to 843 cubic yards, and the erection of the superstructure is under way.

At the head of the slip between Pier 17 and Dock 16 it has been necessary to sink caissons to support a floor beyond the earth fill for the mole, in order to have the slip in the clear of the earth slope. In the past year, 3,890 lineal feet of caissons have been driven, and 1,545 cubic yards of concrete have been placed in them. Concrete in the floor has amounted to 1,866 cubic yards.

A coaling station was determined upon during the past year, to be located on the swampy island across the French canal from Cristobal. Borings were made to determine the most advantageous site and line of approach from the land. A spur track has been constructed to the canal bank between Cristobal machine shops and the printing plant, and bids are invited for a suitable lift or turning bridge to span the canal to the coaling plant site. Plans for the station are in preparation in the office of the Chief Engineer of the Canal Commission.

A memorial service to E. H. Modin, who died on April 21, will be held at the Commission chapel, Gatun, on Sunday, May 11, at 10.45 a. m., under the auspices of the Independent Order of Odd Fellows and the Knights of Pythias. These orders invite members and friends to be present.

PANAMA RAILROAD COMPANY.

Colon-Gatun Shuttle Train Service.

Effective May 7, 1913, daily, except Sundays, shuttle trains will be operated between Colon and Gatun on following schedule, making stops as shown:

STATIONS. (Read Down.)	SOUTHWARD.									
	FIRST CLASS.									
	91	93	95	97	99	101	103	105	107	109
Leave.	A. M.	A. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.
Third Street, Colon.....	7.00	8.00	9.15	10.40	12.50	1.50	2.50	4.05	5.00	6.00
Fifth Street, Colon.....	7.02	8.02	9.17	10.42	12.52	1.52	2.52	4.07	5.02	6.02
Passenger station, Colon.....	7.04	8.04	9.19	10.44	12.54	1.54	2.54	4.09	5.04	6.04
Commissary, Cristobal.....	7.06	8.06	9.21	10.46	12.56	1.56	2.56	4.11	5.06	6.06
Shops, Cristobal.....	7.08	8.08	9.23	10.48	12.58	1.58	2.58	4.13	5.08	6.08
Mount Hope.....	7.12	8.12	9.27	10.52	1.02	2.02	3.02	4.17	5.12	6.12
Mindi.....	7.18	8.18	9.33	.....	1.08	2.08	3.08	.....	5.18	6.18
New Gatun.....	7.22	8.22	9.37	.....	1.12	2.12	3.12	.....	5.22	6.22
Gatun.....	7.25	8.25	9.40	.....	1.15	2.15	3.15	.....	5.25	6.25
Arrive.	A. M.	A. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.
	91	93	95	97	99	101	103	105	107	109
STATIONS. (Read Up.)	NORTHWARD.									
	FIRST CLASS.									
	90	92	94	96	98	100	102	104	106	108
Arrive.	A. M.	A. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.
Third Street, Colon.....	7.55	8.55	10.15	11.15	1.45	2.45	3.55	4.48	5.55	6.55
Fifth Street, Colon.....	7.53	8.53	10.13	11.13	1.43	2.43	3.53	4.46	5.53	6.53
Passenger station, Colon.....	7.51	8.51	10.11	11.11	1.41	2.41	3.51	4.44	5.51	6.51
Commissary, Cristobal.....	7.49	8.49	10.09	11.09	1.39	2.39	3.49	4.42	5.49	6.49
Shops, Cristobal.....	7.46	8.46	10.06	11.06	1.36	2.36	3.46	4.39	5.46	6.46
Mount Hope.....	7.42	8.42	10.02	11.02	1.32	2.32	3.42	4.35	5.42	6.42
Mindi.....	7.36	8.36	9.56	.....	1.26	2.26	3.36	.....	5.36	6.36
New Gatun.....	7.33	8.33	9.53	.....	1.23	2.23	3.33	.....	5.33	6.33
Gatun.....	7.30	8.30	9.50	.....	1.20	2.20	3.30	.....	5.30	6.30
Leave.	A. M.	A. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.
s. Stop.	90	92	94	96	98	100	102	104	106	108

Fares in Panamanian Currency.

BETWEEN--	1st Class.		2d Class.	
Commissary and--				
Third street.....	.10		.05	
Fifth street.....	.10		.05	
Colon passenger station.....	.10		.05	
Cristobal shops.....	.10		.05	
Mount Hope.....	.20		.10	
Colon passenger station and--				
Cristobal shops.....	.20		.10	
Mount Hope.....	.20		.10	
Cristobal shops and--				
Mount Hope.....	.10		.05	

Fares to and from Mindi and Gatun will be collected in accordance with the regular passenger tariff, the Mount Hope rate applying to Cristobal shops and the Colon rate to all other points between the commissary and Third street.

J. A. SMITH,

General Superintendent.

OFFICIAL CIRCULARS.

Personal Injury Compensation.

CULEBRA, C. Z., April 29, 1913.

CIRCULAR No. 235-1:

By Executive Order, dated March 24, 1913, the President has ordered suspended the operation of the Executive Order of February 26, 1913, which was amended March 1, 1913, providing a method of compensation for personal injuries to, or for the death of, employees of the Isthmian Canal Commission and of the Panama Railroad Company, until such time as a further order or direction in the premises shall be made. That Order provides further:

That, until such further order or direction, payment of compensation for injuries to, or for the death of, employees of the Isthmian Canal Commission and of the Panama Railroad Company, occurring after February 28, 1913, shall, as before that date, continue to be made in accordance with the Act of Congress, approved May 30, 1908, (35 Stat. 556), being "An Act granting to certain employees of the United States the right to receive from it compensation for injuries sustained in the course of their employment," the Act of Congress, approved February 24, 1909, (35 Stat. 645), being "An Act relating to injured employees on the Isthmian Canal," Section 5 of the Act of Congress, approved March 4, 1911, being "An Act making appropriations for sundry civil expenses of the Government for the fiscal year ending June thirtieth, nineteen hundred and twelve, and for other purposes," the laws of the Canal Zone, and the rules and regulations heretofore made in regard thereto.

Claims for compensation on account of injuries resulting in disability continuing for more than fifteen days, or in death, and recommendations for the allowance of meritorious sick leave arising out of injuries received by employees in the course of employment subsequent to February 28, 1913, will continue to be prepared, allowed and paid under the regulations in force prior to March 1, 1913.

GEO. W. GOETHALS, Chairman.

Special Orders, No. 97—Brigadier-General Devol.

WAR DEPARTMENT,
WASHINGTON, April 26, 1913,
(Extract.)

3. Brig.-Gen. Carroll A. Devol, Quartermaster Corps, is relieved from duty with the Isthmian Canal Commission and will repair to this city, take station, and report to the Chief of the Quartermaster Corps for duty. The travel directed is necessary in the military service.

[2032171, A. G. O.]

By order of the Secretary of War:

W. W. WOTHERSPOON,
Major General, Acting Chief of Staff.

Official:
GEO. ANDREWS,
The Adjutant General.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon, during the week ending May 3:

Pastores, April 27, from New York, with 15 cases rubber hose, 60 reels barbed wire, 350 coils steel wire, 66 reels wire cable, 32 coils manila rope, for stock, 28 reels insulated wire, eight barrels lamps, incandescent, 12 cases transil oil, 220 cases electrical equipment for First Division; 19 pieces dredge parts, four pieces dredge buckets, for Sixth Division; 20 cases electrical material, for Atlantic Division.

Karl Schurz, April 27, from New York, with 67 cases paper, six cases paint, for stock; 12 barrels batteries, for Mechanical Division; 50 packages buoy parts, for Lighthouse Division.

Cartago, April 28, from New Orleans, with 79 pieces white oak lumber, for Mechanical Division; 26 pieces white oak lumber, 5,562 pieces yellow pine lumber, 1,123 pieces cross ties, 178 barrels fire clay, 1,569 bales prairie hay, for stock.

Border Knight, April 29, from New York, with 113,288 bags cement, for Atlantic and Fifth Divisions; 12,000 cases dynamite, for stock.

Abangares, May 1, from New Orleans, with 604 pieces white oak lumber, for Mechanical Division; 30 rolls cotton duck, 101 cases scouring bar, 71 pieces piling, 89 pieces white oak lumber, 311 pieces cross ties, 3,772 pieces yellow pine lumber, 480 sacks dairy feed, 668 drums oils, 810 cases oils and greases, for stock.

Panama, May 1, from New York, with 251 cases electrical material, 94 cases conduit material, nine reels copper wire, for First Division; 150 pieces pipe fittings, for Atlantic Division; 213 pieces car couplers, 400

pieces car wheels, for Mechanical Division; 33 pieces iron pipe, for Fifth Division; 11 barrels metal, 40 cases books, 62 crates sledge handles, 200 pieces pipe, 48 barrels paint, 65 cases lanterns, 68 cases caustic soda, 16 crates butchers' blocks, 12 crates refrigerators, for stock; and a miscellaneous cargo, the whole consisting of 2,030 packages, weighing 500 tons.

Metapan, May 2, from New York, with 16 cases babbitt metal, 503 pieces galvanized pipe, 10 cases hardware, for stock; 10 cases electrical material, for First Division; 235 pieces structural steel, for Mechanical Division.

Married.

DIETRICH-MERWIN—On April 28, at the Union Church, Cristobal, Miss Frances Bodine Merwin to Mr. Walter Louis Dietrich, both of Brooklyn, N. Y., the Rev. Carl H. Elliott officiating. Canal Zone residence, Empire.

HALL-APGAR—On Thursday, May 1, at the Union Church, Cristobal, by the Rev. Carl H. Elliott, Miss Edith Mae Apgar of Wellsboro, Pa., to Mr. Arthur Hall of New York. Canal Zone residence, Corozal.

Misdirected Letters.

ANCON, C. Z., May 7, 1913.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of addressees:

Allen, Miss Faye	Overman, C. I.
Chamberlain, John S	Rogers, Wm.
Craven, Master (pkg.)	Rossite, L. J.
Doole, Robert	Sausann, Geo.
Durham, Henry W.	Shaw, Charles A.
Eliet, Simon	Sheetz, J. E.
Ellsworth, Miss Marguerite	Smith, William (2)
Engleberth, George	Smith, Jim E.
Feldmann, R.	Steen, A. S. (5)
Ford, Mrs. Beatters	Stokes, George
Francis, Cecil	Terry, E. B.
Garrison, Edward (2)	Terry, D. S.
Gladis, Mike	Wall, Geo.
Howard, Chester (pkg.)	Williams, Mrs. Jeannette
Jones, Phillip	Williams, Sam S.
Kinds, Ugent	Wilson, Ernest
Mahoney, Jerry	Wilson, James
McHarry, Mrs. W. A.	Wilson, C. F.
McLennan, Bruce R. (p'g)	Wilson, Chester
Morrison, Joseph	Woods, Geo.
Mott, Mrs. M.	

LETTERS UNCALLED FOR APRIL 30, 1913.

Anderson, Mrs. James B.	Lester, Mrs. Nell (2)
Barrett, Mrs. O. E.	Millard, Wm. B. (2)
Bellamie, Frank	Norton, R. A.
Brady, Miss Esther	Oxford, S. R.
Cantor, Fred Stress	Pyle, H. B. (2)
Conner, Frank W.	Reed, L. H.
Davis, Grover	Robison, Willard L.
Edmondson, R. C.	Salter, N. F.
Falkner, Charles Hamilton	Severy, Mrs. Grace B.
Figueroa F., Enrique	Shaw, Ed.
Frayser, Benj. F. (2)	Shubert, Charles A.
Gearman, Chas.	Snyder, W. S.
Gooding, Geo. J.	Souder, Harry
Grater, George	Steen, Cadne
Guardiola, Anthony	Swinton, Mrs. Harriet M.
Guild, Charles Mrs.	Thompson, D.
Hall, Frank E.	Washburne, Mr.
Harris, Mrs. Minnie	Williams, George
Howard, Chester Eugene	Williams, Fred
Kernish, Mrs. M. L.	Wilson, G. G.
Lampson, Orson R. (2)	

Auction Sale of Dairy Cows.

ANCON HOSPITAL, May 3, 1913.

On Saturday, May 31, 1913, at 9 a. m., there will be sold at public sale to the Ancon Hospital dairy, eight dairy cows between three and nine years of age.

WEATHER CONDITIONS, CANAL ZONE, APRIL, 1913.

Continued dry season weather prevailed in the Canal Zone during the greater part of the month. The rainfall was below normal at all stations except Gorgona, Frijoles, Gatun, and Brazos Brook. Heavy showers occurred in the Atlantic Section from April 24 to 30. The monthly totals ranged from 0.03 inch at Ancon to 5.38 inches at Gatun. The maximum precipitation recorded on one day was 3.81 inches, at Brazos Brook on the 26th.

Approximately normal conditions of air temperature and wind movement prevailed, while the relative humidity, atmospheric pressure, and cloudiness were generally below normal.

No fogs were observed during the month at either coast station, and but few at the interior stations. Of the fogs observed, 62 per cent were dissipated by 6.30 a. m., 94 per cent by 7.30 a. m., and 100 per cent by 8 a. m. The following table summarizes the weather conditions for the month:

STATIONS.	Press're (reduc'd to mean of 24 hours.)	Temperature.						Precipitation.				Wind.			
		Mean.	Maximum.	Date.	Minimum.	Date.	Mean relative humidity.	Total inches.	Station aver- age.	Number of rainy days.	Total move- ment (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Colon.	29.884	80.8	87	Apr. 25	73	Apr. 21	78	2.69	4.05	14	9,283	N.	28	N.	Apr. 4
Culebra.	29.856	80.1	95	Apr. 14	65	Apr. 20	80	.71	3.66	4	7,006	N. W.	28	N.	Apr. 4
Ancon.	29.847	81.6	96	Apr. 27	66	Apr. 22	76	.03	2.58	1	6,971	N. W.	24	N.	Apr. 2

Also one brown Swiss bull eight years old and a young bull calf. Terms of sale, cash.

The dairy is located near the insane asylum buildings in the rear of the hospital grounds.

CHAS. F. MASON, Superintendent.

COMMISSARY DEPARTMENT.

Cold Storage.

The prices of cold storage articles at the commissaries have not been changed since their publication on April 30.

Rainfall from April 1 to April 30, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	.03	24	.03
Balboa.....	.05	26	.06
*Miraflores.....	.79	26	.79
Pedro Miguel.....	.50	24	1.04
Rio Grande.....	1.00	26	1.12
<i>Central Section—</i>			
Culebra.....	.54	26	.71
*Camacho.....	1.12	25	2.52
Empire.....	.42	25	.90
Gamboa.....	.53	25	1.07
*Juan Mina.....	.39	26	.54
Alhajuela.....	.52	26	.72
*El Vigia.....	.66	26	.98
*Gorgona.....	2.07	26	3.48
*Frijoles.....	1.41	25	2.44
*Trinidad.....	.87	25	2.52
*Monte Lirio.....	1.30	25	3.54
<i>Atlantic Section—</i>			
Gatun.....	2.06	15	5.38
*Brazos Brook.....	3.81	26	5.23
Colon.....	.89	26	2.69
Porto Bello.....	.56	26	2.34
*Bocas del Toro.....	4.23	16	9.34

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight.

April Rainfall for Three Years.

STATIONS.	1911	1912	1913	Station Av.	Years of record	Rainy days 1913
<i>Pacific Section—</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>		
Ancon.....	6.34	2.68	.03	2.58	15	1
Balboa.....	7.39	2.88	.06	3.82	15	2
*Miraflores.....	2.86	4.79	.79	3.18	5	1
Pedro Miguel.....	5.24	4.23	1.04	3.19	6	3
Rio Grande.....	6.86	3.03	1.12	3.26	9	5
<i>Central Section—</i>						
Culebra.....	4.89	3.14	.71	3.66	23	4
Camacho.....	6.98	2.44	2.52	3.38	7	5
Empire.....	3.93	2.64	.90	3.26	9	5
Gamboa.....	4.01	.77	1.07	3.46	32	5
Juan Mina.....	2.53	.86	.54	1.31	3	7
Alhajuela.....	4.88	.20	.72	3.04	14	5
El Vigia.....	3.40	.37	.98	1.88	5	7
Gorgona.....	3.16	.74	3.48	2.94	9	5
Frijoles.....	1.19	2.44	1.82	2	12	
Trinidad.....	3.33	3.03	2.52	4.75	6	15
Monte Lirio.....	5.27	1.29	3.54	4.65	6	10
<i>Atlantic Section—</i>						
Gatun.....	6.38	4.18	5.38	4.20	9	15
Brazos Brook.....	3.00	.85	5.23	3.46	7	17
Colon.....	3.06	.75	2.69	4.05	43	14
Porto Bello.....	6.60	.54	2.34	5.86	6	13

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule of moving picture entertainments for the week May 12 to 17 is, as follows: Monday, Gorgona; Tuesday, Corozal; Wednesday, Empire; Thursday, Culebra; Friday, Cristobal; Saturday, Gatun; Friday, Porto Bello.

The standing of the Isthmian Duckpin Bowling League, as of May 5 is, as follows:

Team.	Won.	Lost.	P.C.
Gorgona.....	18	9	.667
Empire.....	18	9	.667
Culebra.....	15	12	.556
Cristobal.....	15	12	.556
Gatun.....	11	16	.556
Corozal.....	4	23	.148

The standing of the Indoor Baseball League, as of May 5 is, as follows:

Team.	Won.	Lost.	P.C.
Camp Elliott.....	2	0	1.000
Gatun.....	2	0	1.000
Cristobal.....	1	1	.500
Corozal.....	1	1	.500
Empire.....	0	2	.000
Gorgona.....	0	2	.000

The standing in the American Duckpin League, as of May 5 is, as follows:

Team.	Won.	Lost.	P.C.
Empire.....	14	7	.667
Cristobal.....	14	7	.667
Corozal.....	6	12	.333
Gatun.....	5	13	.278

Mr. C. C. Pearsall of the Eccles Company, who was detained on the zone by sickness, played the piano at the moving picture entertainments during the week, May 3 to 10.

COROZAL.

The Corozal and Empire indoor baseball teams played on the Corozal floor Saturday night, May 3, immediately after the moving picture show. The score was 36 to 13 in favor of Corozal. The lineup was, as follows:

Corozal—Roberts, 1b; Potter, 2b; Taylor, 3b; Kenny, ss; Souder, f; Emerson, c; Sims, p.

Empire—Giavelli, 1b; Watson, 2b; Brown, 3b; Sawyer, ss; Newbold, f; Rose, c; Gardner and Hall, p; umpire, Stevens. Corozal will play Gatun at Gatun on Saturday, May 10.

The Apollo Concert Company will appear at the clubhouse Friday night, May 9.

The membership in April was 462. Corozal now has the largest membership of any local clubhouse, except Gatun.

Twenty-seven new books were added to the library last Friday.

GORGONA.

At the "smoker" held on Thursday evening, the following program was given: Selection by orchestra from Camp Otis; buck and wing dancing by O'Toole; piano selection by Wright; Cogan, Emery, and Robitoy in a new play; bass solo by Case; illuminated Indian club swinging by Kramer; Kane from Camp Elliott, Burmaster, and Patterson in a special feature; Fitchet and Norman, States entertainers; wrestling by Willoughby and Quinn. Refreshments, consisting of coffee and sandwiches, with plenty of cigars, were served.

The debating club held its regular meeting on Friday evening; subject, "Resolved, that all men over 30 years of age, and all women over 25 years of age and not married shall be subject to a special tax." The question was affirmed by Mr. Verner, and denied by Mr. Swanson. After the regular discussion the debate was opened for discussion, Messrs. Ewing, and Patterson spoke. A vote was taken as to which side won. The popular vote was in favor of the negative. The next meeting will be on Friday, May 9, 1913; subject, "Resolved, that tolls on American vessels shall be remitted." The public is invited to attend.

The Cristobal bowling team took two games from Gorgona on Saturday evening, by the following scores:

Gorgona.			Cristobal.				
Roper.....	77	86	87	Barrett.....	87	78	87
Denst.....	106	82	87	Weston.....	83	87	85
Dunlap.....	80	80	82	Collins.....	103	90	101
King.....	86	89	95	Smith.....	91	91	92
Davis.....	103	81	80	Bullard.....	85	91	94

Totals. 452 418 431 449 437 459

The high scores for the week were, as follows: Davis, 108, 103, 106, 103 103; Denst, 102, 106, Phillips, 100, Swain, 116; King, 123, 105, 102; Regan, 100.

GATUN.

Thursday evening, May 1, was known as "chess night" at the Gatun clubhouse. Walter J. Shutes, the star chess player of Gatun, played 10 other men simultaneously, and won every game. Others who participated were: Messrs. Logan, Morgan, Farley, Shropshire, Sullivan, Allyea, McQueen, Regan, Dale. Wil-

liams. After the tournament, the Gatun Chess Club was formed. Mr. Shutes is president, and Mr. Shropshire, secretary-manager. The club is open for challenges. The result of the match with Empire on Saturday evening, May 3 was: Gatun 8; Empire 5.

A "Current Topics Club" will be formed on Thursday, May 8. The object of the club is for the discussion of present day topics. Occasionally, a formal debate will be held. Any Y. M. C. A. member may join.

Mr. C. C. Pearsall, accompanist of the Four College Girls Company, will play the piano for the moving picture entertainment on Friday evening, May 9. Mr. Pearsall will play several of the popular selections which were given by his company at their recent entertainments on the Isthmus.

Sixty new library books were ordered recently from the States; also 100 new pennants.

Gatun took two out of three games of duckpins in the Isthmian league series on Saturday evening, May 3, as follows:

Culebra.				Gatun.			
Case.....	105	99	84	Claherty.....	95	94	90
Silver.....	102	82	87	Wells.....	105	85	82
Brown.....	76	74	79	DePooter.....	97	81	
Durand.....	93	90	92	DeMoll.....	89		70
Kiernan.....	76	102	105	Wurster.....	102	92	109
				Green.....		78	88

Totals.... 452 447 447 488 430 448

On Thursday evening, May 1, the "Stars" won three straight games of duckpins from the "Outlaws."

The following periodicals have been added to the reading room list: National Geographic Magazine, American Photography, Good Housekeeping, Outing, Sporting News, Railroad Man's Magazine, Cassier's, Chicago Tribune, International Review, Christian Herald, North American Review, the Nation, Physical Culture, Country Gentleman, Lippincott's, Practical Electricity.

A handicap billiard and a handicap pool tournament were started on May 1. Entries for pool are: Coleman 60, Baxter 70, Reisner 50, Garrett 70, Kerruish 60, Pettit 60, Mitchell 50, Garrison 50, Bethea 50, Galloway 80, O'Hara 70, Brown 50. Entries for billiards: Townsley 100, Coleman 70, Bellringer 100, Galloway 75, Wurster 100, Hughes 100, Dickson 65.

On account of Gorgona's team failing to appear at Gatun on Saturday evening, May 3, the indoor baseball game of the interassociation series was forfeited to Gatun. In order to satisfy the fans, a game was played between the regular Gatun team and a scrub team. The lineup was, as follows:

Gatun—Thompson, c., G. Duer p., Stevens 1b., Mitchell 3b., Wathen 3b., J. Duer ss., Claybourne f.

Scrubs—Brown c., Wright p., Dickson 1b., Loudon 2b., Carpenter 3b., Woolworth ss., Flynn f.

Mr. McCormick acted as referee. The regular team has won two games and lost none so far in the Isthmian League.

CRISTOBAL.

On Monday night the class in Spanish under Prof. José Gomez closed its second series of lessons. The two classes will organize into another advanced class on Monday, May 5. Ten lessons for \$2.50.

The next moving picture entertainment in the series will be on Thursday, May 8. There will be two special reels, the Fitzjenammer Kids and Pathe's Weekly.

On Saturday night, May 10, the Culebra bowling team will roll the local team in the last series of the Isthmian Duckpin League.

The indoor baseball team lost its first game this season to the Camp Elliott team by the score of 12 to 7, on Saturday night, May 3. It was the fastest game that has ever been played on the Cristobal floor, the score being a tie up to the ninth inning when Cristobal began to fumble the ball and Camp Elliott took the lead. The lineup follows:

Cristobal—Mathues c., Frazer p., Wehmeier 1b., Russell 2b., MacSparren 3b., Raymond ss., Carpenter f. Camp Elliott—O'Brien c., Walbridge p., Johnson 1b., Harper 2b., Dejure 3b., MacDonald ss., Anderson f.

Score by innings:

	1	2	3	4	5	6	7	8	9
Camp Elliott.....	0	0	0	0	1	2	1	6	—12
Cristobal.....	0	0	0	0	3	0	0	3	1—7

Sale of Household Goods.

MOUNT HOPE, C. Z., April 30, 1913.

The following articles are on hand at Mount Hope Depot in the storehouse for obsolete material and are available for sale to employees at prices shown:

16 boards, meat cutting, No. 3, 16" x 18" each 10c; 21 boards, meat cutting, No. 3, 12" x 18" each 10c; 3 blocks, meat, hardwood, 12" x 16" each 16c; 10 blocks, pastry, birchwood, 20" x 30" each 22c; 2 blocks, pastry, birchwood, 20" x 24", each 22c; 3 blocks, pastry, birchwood, 18" x 24", each 19c; 32 breakers, ice, each 65c; 9 cutters, bread, Acme, each \$1.25; 14 cutters, slaw, w/boxes (3 blades), each 53c; 144 sticks, candle, agate, each 4c.

These articles will be disposed of for cash and may be seen on any working day between the hours of 7 to 11 a. m., and 1 to 5 p. m.

C. NIXON, Depot Quartermaster.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Allianca.....	P. R. R. Thursday.....	May 1
Colon.....	P. R. R. Wednesday.....	May 7
Advance.....	P. R. R. Tuesday.....	May 13
Panama.....	P. R. R. Tuesday.....	May 20
Allianca.....	P. R. R. Monday.....	May 26

CRISTOBAL TO NEW YORK.

Panama.....	P. R. R. Wednesday.....	May 7
Allianca.....	P. R. R. Tuesday.....	May 13
Colon.....	P. R. R. Monday.....	May 19
Advance.....	P. R. R. Monday.....	May 26
Panama.....	P. R. R. Sunday.....	June 1
Allianca.....	P. R. R. Saturday.....	June 7

NEW YORK TO COLON.

Zacapa.....	U. F. C. Wednesday.....	April 30
Emil L. Boas.....	H. A. Saturday.....	May 3
Sixaola.....	U. F. C. Saturday.....	May 3
Almirante.....	U. F. C. Wednesday.....	May 7
Prinz Joachim.....	H. A. Saturday.....	May 10
Carrillo.....	U. F. C. Saturday.....	May 10
Magdalena.....	R. M. Saturday.....	May 10
Santa Marta.....	U. F. C. Wednesday.....	May 14
Carl Schurz.....	H. A. Saturday.....	May 17
Pastores.....	U. F. C. Saturday.....	May 17
Metapan.....	U. F. C. Wednesday.....	May 21
Prinz August Wilhelm.....	H. A. Saturday.....	May 24
Tivives.....	U. F. C. Saturday.....	May 24
Tagus.....	R. M. Saturday.....	May 24
Zacapa.....	U. F. C. Wednesday.....	May 28
Emil L. Boas.....	H. A. Saturday.....	May 31
Sixaola.....	U. F. C. Saturday.....	May 31
Prinz Joachim.....	H. A. Saturday.....	June 7
Oruba.....	R. M. Saturday.....	June 7

COLON TO NEW YORK.

Carl Schurz.....	H. A. Wednesday.....	May 7
Metapan.....	U. F. C. Thursday.....	May 8
Tagus.....	R. M. Tuesday.....	May 13
Tivives.....	U. F. C. Tuesday.....	May 13
Zacapa.....	U. F. C. Thursday.....	May 15
Sixaola.....	U. F. C. Tuesday.....	May 20
Emil L. Boas.....	H. A. Wednesday.....	May 21
Almirante.....	U. F. C. Thursday.....	May 22
Oruba.....	R. M. Tuesday.....	May 27
Prinz Joachim.....	H. A. Tuesday.....	May 27
Carrillo.....	U. F. C. Tuesday.....	May 27
Santa Marta.....	U. F. C. Thursday.....	May 29
Pastores.....	U. F. C. Tuesday.....	June 3
Carl Schurz.....	H. A. Wednesday.....	June 4
Metapan.....	U. F. C. Thursday.....	June 5
Tivives.....	U. F. C. Tuesday.....	June 10
Prinz August Wilhelm.....	H. A. Tuesday.....	June 10
Zacapa.....	U. F. C. Thursday.....	June 12

NEW ORLEANS TO COLON.

Atenas.....	U. F. C. Saturday.....	May 3
Parismina.....	U. F. C. Wednesday.....	May 7
Turrialba.....	U. F. C. Saturday.....	May 10
Cartago.....	U. F. C. Wednesday.....	May 14
Abangarez.....	U. F. C. Saturday.....	May 17
Heredia.....	U. F. C. Wednesday.....	May 21
Atenas.....	U. F. C. Saturday.....	May 24
Parismina.....	U. F. C. Wednesday.....	May 25
Turrialba.....	U. F. C. Saturday.....	May 31

COLON TO NEW ORLEANS.

Abangarez.....	U. F. C. Thursday.....	May 8
Heredia.....	U. F. C. Saturday.....	May 10
Atenas.....	U. F. C. Thursday.....	May 15
Parismina.....	U. F. C. Saturday.....	May 17
Turrialba.....	U. F. C. Thursday.....	May 22
Cartago.....	U. F. C. Saturday.....	May 24
Abangarez.....	U. F. C. Thursday.....	May 29
Heredia.....	U. F. C. Saturday.....	May 31

Stages of the Chagres.

DAY AND DATE.	Vigia.	Alhajuela.	Gamboa.	Gatun Lake.
Sun., April 27.....	125.8	92.0	49.1	49.1
Mon., April 28.....	125.5	91.6	49.2	49.4
Tues., April 29.....	125.6	91.6	49.2	49.1
Wed., April 30.....	125.8	92.0	49.2	49.1
Thurs., May 1.....	125.6	91.7	49.2	49.2
Fri., May 2.....	127.2	93.2	49.5	49.2
Sat., May 3.....	131.9	96.7	50.5	49.4
Height of low water to nearest foot.....	125.0	91.0	44.0	.....

Tide Table.

DATE.	High	Low	High	Low	High
	A.M.	A.M.	P.M.	P.M.	P.M.
May 11.....	12.53	6.57	1.17	7.12	
May 12.....	1.43	7.50	2.12	8.07	
May 13.....	2.39	8.50	3.17	9.12	
May 14.....	3.43	9.58	4.27	10.27	
May 15.....	4.53	11.08	5.35	11.42	
		P.M.			
May 16.....	6.00	12.15	6.38		
May 17.....	12.50	7.00	1.14	7.34	

CANAL



RECORD

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No. 38.

The Canal Record

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Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

More Concrete Work for Atlantic Division.

The Atlantic Division will take over part of the concrete work of the First Division at Gatun Locks. It will furnish material and labor for the forms and install concrete for the towing and return tracks on the lower approach and wing walls, as well as on the inclines which have not been concreted by the First Division. The latter will indicate the level and alignment. This arrangement will permit of the transfer of more of the First Division force to Miraflores Locks, where the installation of track is not as far advanced as at Gatun.

Canal Excavation in April.

The grand total of Canal excavation to May 1 was 198,243,402 cubic yards; leaving to be excavated 19,894,897 cubic yards.

The total excavation for the month of April was 2,655,095 cubic yards, as compared with 2,754,383 cubic yards for the corresponding month last year and 2,691,753 cubic yards in April, 1911.

The dry excavation last month amounted to 1,676,000 cubic yards, entirely by steam-shovels. The dredges removed 979,095 cubic yards.

In the Atlantic Division, the total excavation was 469,677 cubic yards. Of this amount, 29,649 cubic yards were dry excavation in the vicinity of the locks, and the remainder—440,028 cubic yards—was principally wet excavation from the channel and harbor section.

The total excavation in the Central Division was 1,179,100 cubic yards, which includes 1,100 cubic yards charged to "Plant excavation."

In the Pacific Division, the total excavation was 1,006,318 cubic yards, 467,251 cubic yards of which consisted of dry excavation, 23,875 at Miraflores spillway, 68,296 at the Balboa terminal, and 375,080 from the prism between Pedro Miguel and Miraflores Locks, and

immediately south of the latter. Of the 539,067 cubic yards of wet excavation, 182,125 cubic yards were taken from the terminal site, and the remainder from the Pacific entrance.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total Excavation.
	Cu. Yds.	Cu. Yds.	Cu. Yds.
Dry excavation—Locks, dam and spillway.....	29,649	.....	29,649
Mindi Terminal.....	.....	.....	.....
Total.....	29,649	.....	29,649
Wet excavation—Atlantic entrance.....	436,605	.....	436,605
Locks, dam and spillway.....	3,423	.....	3,423
Terminal.....	.....	.....	.....
Total.....	440,028	.....	440,028
Total wet and dry excavation.....	469,677	.....	469,677

CENTRAL DIVISION.

Dry excavation—Culebra Cut.....	1,178,000	1,100	1,179,100
Chagres.....	.....	.....	.....
Obispo diversion.....	.....	.....	.....
Total.....	1,178,000	1,100	1,179,100

PACIFIC DIVISION.

Dry excavation—Locks, dam and spillway.....	23,875	.....	23,875
Terminals.....	68,296	.....	68,296
Prism.....	375,080	.....	375,080
Total.....	467,251	.....	467,251
Wet excavation—Pacific entrance.....	356,942	.....	356,942
Miraflores Locks.....	.....	.....	.....
Diversions.....	182,125	.....	182,125
Terminals.....	.....	.....	.....
Total	539,067	.....	539,067
Total wet and dry excavation.....	1,006,318	.....	1,006,318

TOTAL CANAL EXCAVATION.

Dry excavation.....	1,674,900	1,100	1,676,000
Wet excavation.....	979,095	.....	979,095
Total.....	2,653,995	1,100	2,655,095

LOCKS AND DAMS.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	Cu. Yds.	Cu. Yds.
Concrete placed in locks.....	22,732	15,411	38,143
Concrete placed in dams and spillways ..	1,358	6,284	7,642
Fill placed in dams.....	106,862	16,215	123,077

Mean rainfall along Canal (ten stations), 1.89 inches. By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as prism, diversions, or locks, etc., that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes

only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

Status of Work in Fifth Division on May 1.

A statement showing the work accomplished in the Fifth Division up to and including April 30, 1913, based upon the revised estimate of March 1, 1913, and the amounts remaining to be done, follows:

DESCRIPTION.	Done up to date.	Remaining to be done.
	Cu. Yds.	Cu. Yds.
Dry excavation—prism—Between Pedro Miguel and Miraflores.....	759,136	304,364
Below Miraflores Locks to upper dike.....	2,991,411	571,189
Between dikes.....	58,633	1,350,567
Hydraulic excavation.....	1,549,900	.....
Pedro Miguel west dam—Dry filling.....	692,900	.....
Concrete.....	937	.....
Miraflores west dam—Dry excavation.....	.....	1,440
Dry filling.....	1,635,629	.....
Wet filling.....	661,000	.....
Concrete.....	150	50
Miraflores east dam and spillway—Dry excavation.....	122,305	47,795
Concrete.....	23,446	51,544
Pedro Miguel Lock—Dry excavation.....	1,102,200	.....
Preparing foundation.....	189,620	.....
Concrete, plain.....	836,477	110
Concrete, reinforced.....	70,743	723
Backfilling.....	962,801	58,033
Miraflores Locks—Dry excavation.....	642,300	.....
Wet excavation.....	1,407,427	2,332
Concrete, plain.....	69,634	2,199
Concrete, reinforced.....	1,472,201	489,046
Backfilling.....	.....	.....

Inundating Pit in Pacific Sealevel Section.

The work of filling the section between the two dikes, south of Miraflores Locks, with water, preparatory to beginning dredging operations, is in progress. The material in this area was partly removed by the hydraulic excavation plant, which was closed down about December 1, 1912. Since then, one-half of the plant has been dismantled and transferred to a point back of Gold Hill, where it is being set up for hydraulic work on slides, while part of the remaining equipment has been used in furnishing compressed air to the drills, etc., in the vicinity of Miraflores Locks. One of the two remaining pumps is now engaged in pumping water into the above pit.

It was originally planned to excavate the remainder of the material in this pit in the dry, but as dredges were available a change in the method was decided on. In order not to endanger the north dike, which rests on rock foundation, without penetration, it was decided to let the water in gradually, and this is being accomplished in three ways, namely, by pumping from the sump at the Aguadulce pumping station; by siphon, and by damming the Rio Grande diversion, thus backing up the water so that it will flow into the pit by gravity through pipes under the Balboa sand track. Pumping was begun on Monday, April 28, the discharge being through a 12-inch pipe. By this method about 7,000,000 gallons of water are added to the

supply every 24 hours. The siphon was installed and began working on Tuesday, May 6, and consists of a 20-inch pipe laid over the south dike, drawing water from the sealevel channel. It can be operated only about one hour and three-quarters before and after high tide, but adds about 6,000,000 gallons a day to the supply. The two 20-inch pipes from the Rio Grande diversion furnish a cheap and continuous supply amounting to about 10,000,000 gallons a day. The amount could be increased but for the work at the Miraflores spillway which will not permit of a rise of water in the diversion higher than nine feet above sealevel, so a part of the flow of the stream escapes. The total daily supply amounts to about 23,000,000 gallons, about equally divided between salt and fresh water, and at the present rate, the pit will probably be filled some time this week. It is planned to allow the water to rise until it reaches an elevation about two feet above mean sealevel, when the dike will be blown up. The north dike, which separates the pit from steamshovel operations immediately south of Miraflores Locks, has been widened and strengthened by the dumping of additional material.

Concrete Work in Locks and Spillways.

Over 99 per cent of the entire quantity of concrete to be placed in the locks had been laid at the close of work on May 10, the amount in place being 4,449,373 cubic yards.

A statement of the concrete laid in the six locks of the Canal, and in Gatun and Miraflores spillways, as of May 10, follows.

GATUN LOCKS.		Concrete laid.
May 5.....		488
May 6.....		672
May 7.....		680
May 8.....		344
May 9.....		428
May 10.....		680
Total.....		3,292
Previously reported.....		2,025,623
Grand total.....		2,028,915
PEDRO MIGUEL LOCK.		
May 5.....		25
May 6.....		49
May 7.....		57
May 8.....		37
May 9.....		54
May 10.....		72
Total.....		294
Previously reported.....		920,159
Grand total.....		920,453
MIRAFLORES LOCKS.		
May 5.....		100
May 6.....		387
May 7.....		180
May 8.....		314
May 9.....		336
May 10.....		402
Total.....		1,719
Previously reported.....		1,498,286
Grand total.....		1,500,005
GATUN SPILLWAY.		
May 5.....		56
May 6.....		52
May 7.....		56
May 8.....		38
May 9.....		75
May 10.....		46
Total.....		323
Previously reported.....		225,432
Grand total.....		225,755
MIRAFLORES SPILLWAY.		
May 5.....		335
May 6.....		427
May 7.....		370
May 8.....		325
May 9.....		434
May 10.....		480
Total.....		2,371
Previously reported.....		26,963
Grand total.....		29,334

SOCIAL LIFE OF THE ZONE.

Exhibition of Curios.

An exhibition of curios was held in the entertainment hall of the Commission clubhouse at Empire on May 6 and 7. The greater part of the articles shown were from Central and South America, but a number of articles from other countries were catalogued also. The exhibitor on the largest scale was Mrs. Dove L. Prather, whose Guatemalan bazaar occupied one end of the hall. Here were shown the dress of the native women and children, examples of native pottery, toys, and baskets, straw-packing mats and large rope bags; and for the transportation of farm products and other articles, saddle bags and panniers; also, several pieces of hand wrought silver jewelry.

Other women exhibitors were Mrs. W. H. Brown, who showed a Navajo blanket of rare weave, and a collection of original oil paintings; Mrs. Ernest Van Lira Finch, who showed a suit of reindeer skins of a Labrador Eskimo; Mrs. Fred Gorham, who exhibited the skin of a young seal, and Mrs. Gardener, who had a rolling pin made of the wood of an apple tree, a relic of the War of 1812. Mr. Russell, under whose direction the exhibit was conducted, showed a valuable collection of butterflies, moths, and beetles, a tom-tom (native musical instrument), and several kinds of hides. Messrs. Fred and Jack Whaler lent a collection of relics from the Indian graves in the province of Chiriqui, Republic of Panama, a large number of postal card views and photographs of scenes in the interior, and arrows and bags of the Cholo Indians. There was a notable collection of old coins lent by Mr. Killfoil; Mr. Otto Schroeter showed a collection of butterflies and moths; Mr. Ross, a number of snakes in pickle, and taxidermic specimens; Mr. Freeland, a tobacco set made of native woods; Mr. Rawson, nine hides of animals; Mr. Hall, hides of animals; Mr. Frank Skinner, a shark's tooth of large size; Mr. Wertz, a piece of petrified cottonwood taken from the Canal, near Mamei; the Rev. A. A. Nellis, photographs and postal card views; Master Kenyon Zinn, a saw fish; Mr. Darling, a collection of shells and conches from the Pacific Ocean. In addition, there was exhibited a collection of articles confiscated from criminals arrested in the Canal Zone, among them being machetes, clubs of various weights and sizes, ancient guns and pistols, etc.

This is the second exhibit that has been held in the clubhouse, the first, in November, 1912, consisting mainly of photographs and postal card views.

The Strangers Club will give a dinner concert and dance on the eve of Decoration Day, May 29.

Tennis Tournament.

An all-comers' tournament in doubles will be held at Ancon on Sunday, May 25, and Decoration Day, May 30, 1913. This tournament is for the Isthmian championship, and is open to all members and clubs affiliated with the association. Entrance fee is \$1 for each player; it must be in the hands of the acting secretary, C. E. Nevius, Ancon, not later than May 22, 1913.

I. B. of S. S. and D. M.

Local No. 19, International Brotherhood of Steamshovel and Dredgemen, will hold its

next meeting at the Empire lodge hall on Sunday, May 18, at 12.15 p. m. All members are requested to be present.

J. I. MAJOR,
Secretary and Treasurer.

Empire, C. Z., May 12, 1913.

Obituary.

Mr. Joseph McDonald Sinclair, chief clerk in the office of the superintendent of Ancon Hospital, died suddenly at his home in the hospital grounds at 6.40 p. m., on May 8, from organic disease of the heart. He was 32 years of age, had been in the service of the Canal Commission since July, 1904, coming to the Isthmus from Washington, D. C., and was a member of the Society of the Incas and of the Society of the Chagres. He is survived by his wife. The funeral service was held at St. Luke's Hospital chapel on Sunday afternoon, May 11.

Mrs. Mary A. Grout, living with her son, F. E. Grout, at Diablo, died during the night of May 6. She was 64 years of age, a widow, and had been on the Isthmus two years, coming here from Portsmouth, Ohio.

Convicted of Second Degree Murder.

J. Frank Houston, who shot and killed Harry Stern at Gatun on February 8, was convicted of murder in the second degree in the Circuit Court of the Third Judicial Circuit at Cristobal on May 1. The motion for a new trial was overruled, and the minimum sentence of 10 years in the Canal Zone penitentiary was imposed by Justice Brown on Thursday, May 8. Notice of an appeal to the Supreme Court has been given.

Dates for Public Land Hearings Cancelled.

The large number of claims filed by occupants of estates under consideration by the Joint Land Commission has resulted in a large amount of unfinished business. The commission has, therefore, found it necessary to cancel all dates hitherto announced for public hearings. An announcement will be made later of the dates on which hearings will be held.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending May 10:

DATE.	Hours worked.	Cubic yards.
May 5.....	6.50	2,227
May 6.....	5.50	2,310
May 7.....	6.55	1,681
May 8.....	6.15	2,640
May 9.....	4.35	1,607
May 10.....	3.00	1,095
Total.....	33.25	11,560

United Spanish War Veterans.

The next meeting of Chagres Camp will be held in the I. C. C. lodge hall, Gorgona, on Sunday, May 18, at 2.30 p. m..

Sailing of the "Cristobal."

The sailing date of the steamship *Cristobal* has been set for Friday, May 16, at 3 p. m., from pier No. 11, Cristobal.

J. Gordon, a Barbadian employed by the McClintic-Marshall Construction Company was killed on Tuesday, May 13, by falling from a lock wall, a distance of 75 feet.

CANAL MEDAL BAR LIST.

The attached list contains the names of employes and exemployes of the Isthmian Canal Commission, who at some time during the past year completed their fourth year of continuous service on the Isthmus and are now entitled to their first service bar. The date shown opposite each name is that from which the bar service begins.

All changes or corrections should be reported to the Office of the Chairman, at Culebra, at an early date.

As soon as the list is revised, numbers will be assigned by alphabetical order of surnames, on both medal and bar lists, and the lists will be forwarded to the Washington Office of the Isthmian Canal Commission, where final arrangements will be made for the proper engraving. Distribution will be made about October 1 of the present year.

The heads of divisions are requested to carefully check their lists of American employes on the silver rolls, and to report any omissions on this list to the Office of the Chairman.

Name.	Date.	Name.	Date.	Name.	Date.	Name.	Date.	Name.	Date.
1910.									
Brent, Raleigh C.....Jan. 1		Kinney, Michael.....Feb. 18		Doby, W. F.....April 3		Reimann, Richard.....May 15		Myers, Thomas J.....June 22	
Cooper, Edward J.....Jan. 1		Calthirst, Percy.....Feb. 19		Gannon, M. E.....April 3		Bates, Lewis B.....May 16		Kelleher, Morris I.....June 24	
Bledsoe, Louis V.....Jan. 3		Williams, Charles.....Feb. 19		Joyce, R. W.....April 3		Kemper, Roy E.....May 16		Labat, John.....June 24	
Hoffman, George M.....Jan. 4		Marsh, Marvius M.....Feb. 20		Kelly, M. J.....April 3		Russell, Stacey C.....May 16		Kent, Lucien B.....June 27	
Mack, Thomas.....Jan. 4		Brooks, Herbert.....Feb. 21		Weir, Jas. E.....April 3		Pfisterer, August.....May 18		Bartholomew, Annie M.....June 30	
Titus, William L.....Jan. 4		Comrie, George R.....Feb. 21		Shields, Wm.....April 9		Casey, Will B.....May 20		Cucuel, Leo M.....June 30	
Garrison, Albert D.....Jan. 6		McConaughy, Harvey Feb. 21		Graff, Jacob.....April 10		Hewitt, Justin H.....May 20		Johnson, Charles F.....June 30	
Sergison, Alexander.....Jan. 6		Newcomb, Howard S. Feb. 21		King, Ray.....April 10		Hunderlach, Edward A.....May 20		Sanders, Bruce G.....June 30	
Taylor, James W.....Jan. 6		Purcell, John J.....Feb. 21		Powell, T. L.....April 11		Pentz, Artemus W.....May 20		Smith, Jesse T.....June 30	
Lyon, Willis E.....Jan. 7		Reed, Linus M.....Feb. 21		Dempster, Geo. R.....April 12		Collons, William F.....May 21		Soule, Edgar C.....June 30	
Mayne, James B.....Jan. 7		Woolfolk, Thomas R. Feb. 21		Burke, Jos. L.....April 13		Ewing, Johnson C.....May 21		Wilson, Eugene T.....June 30	
Thull, Peter J.....Jan. 8		Schwalenberg, Martin A.....Feb. 24		Ferguson, Fred P.....April 13		Killeen, Patrick J.....May 21		Mee, George H.....July 2	
Morris, Dallas.....Jan. 9		Schutte, Frederick W. Feb. 26		Howe, Wm. H.....April 13		Bonnell, Leander P.....May 21		Randolph, Joseph H.....July 2	
Barningham, John W. Jan. 10		Bell, William S.....Feb. 27		Winquist, Chas.....April 13		Curtis, Wilfred S.....April 14		Slattery, Richard.....July 2	
Dibble, Wm. H.....Jan. 13		Henter, Charles.....Feb. 27		Kemp, John W.....April 15		Kemp, John W.....April 15		Callahan, William V.....July 6	
Lambert, Ed.....Jan. 14		Hauschild, Fernand...Mar. 1		Days, Joseph M.....April 16		Hilleary, Chase M.....May 25		Martin, Joseph.....July 6	
Fowler, Frank W.....Jan. 15		Huck, Francis E., Jr. Mar. 2		Fullinwider, R. A.....April 16		LeMire, George E.....May 25		Tuttle, Mearl J.....July 6	
Gilbert, Garfield O.....Jan. 15		Jamieson, John.....Mar. 2		Brown, Frank R.....April 18		McKeown, Henry.....May 25		Walsh, Patrick F.....July 6	
Holmes, William J.....Jan. 15		Kummers, Adolph P. Mar. 2		Hughlings, S. D.....April 18		Moore, Sidney.....May 25		Weiser, William M.....July 6	
Newell, Henry F.....Jan. 15		Ourand, Charles H.....Mar. 2		Nigg, Alois.....April 18		Sweeney, George F.....May 25		Carroll, Michael J.....July 7	
Gamble, Neil M.....Jan. 17		Padden, John E.....Mar. 2		Greeley, John W., Sr. April 20		Williams, William M. May 25		Francis, Judson W.....July 7	
Dunn, John H.....Jan. 20		Tomlinson, Henry G. Mar. 2		Ledden, Mary E.....April 20		Rottmann, Charles.....May 27		West, Charles S.....July 8	
Rule, Edgar.....Jan. 20		Watson, Lulu M.....Mar. 2		Safirstein, Benj.....April 20		Pratt, Milo C.....May 31		Wilkins, John H.....July 8	
Wurdemann, Ernest F. Jan. 20		Cornwell, Varney T. Mar. 3		Goulstone, Arthur J. April 21		Williams, Joseph D.....May 31		Gray, John.....July 9	
Cassell, George H.....Jan. 21		Wurdemann, Herman. Mar. 4		Shivers, Mary G.....April 21		Claybourn, Noel C.....June 2		Wagner, Jake.....July 9	
Condon, Frank J.....Jan. 21		Foust, Samuel M.....Mar. 5		Flavin, Thos.....April 22		Greene, Jay L.....June 2		Corinthwaite, Homer G. July 13	
McIntire, Leo A.....Jan. 21		Adams, Roger H.....Mar. 7		Frahm, August.....April 22		Huson, Claude J.....June 2		Harkins, Hugh J.....July 13	
Willett, George L.....Jan. 21		Durning, William J. Mar. 7		Sessions, V. V.....April 22		Ives, Fred W. B.....June 2		Huff, Mercer B.....July 13	
Kenealy, William L. Jan. 22		Wilcox, John S.....Mar. 8		Landers, Jas. W.....April 23		Rath, Thomas J.....June 2		Stollmack, Abraham I. July 13	
Barkley, James M.....Jan. 23		Minnix, Warren E.....Mar. 9		Gibson, Jas.....April 24		Yerkes, Arthur W.....June 4		Knight, William O.....July 15	
Todt, Frederick M.....Jan. 23		Laherty, Edward.....Mar. 10		Hobbs, Herbert C.....April 24		Bailey, Cecil C.....June 5		McDevitt, John F.....July 15	
Hunter, William.....Jan. 26		Painter, Josepa H.....Mar. 12		Marsh, Jos. S.....April 24		Campbell, John J.....June 5		Valentine, Amelia J.....July 15	
Neville, Edward J.....Jan. 26		Driver, John B.....Mar. 14		Hall, Wm. F.....April 25		Cohen, Harry.....June 5		Walker, John A.....July 15	
Staples, Thomas O.....Jan. 26		Forman, Mary M.....Mar. 14		Jennings, H. W.....April 25		Heslin, Thomas E.....June 5		Carson, Arthur.....July 16	
Caruthers, Albert B. Jan. 26		McKeever, Bernard E. Mar. 14		Gage, Genevieve.....April 27		McElroy, George N.....June 5		Carson, Arthur.....July 16	
Dorn, William F.....Jan. 27		Wright, George F.....Mar. 14		Grier, Chas. L.....April 27		Meyer, Max L.....June 5		Carter, H. R., Jr.....July 16	
Van De Mark, Duane. Jan. 27		DePew, Jasper H.....Mar. 15		Marks, Geo. S.....April 27		Noonan, Philip.....June 5		Jaquish, George.....July 16	
Yborborough, Grace...Jan. 29		Grobe, John R.....Mar. 17		Bardelson, Sam'l.....April 29		Schneider, Barney.....June 5		Thatcher, Roland C. July 16	
Mhoon, John A.....Jan. 31		Knapp, Edward H.....Mar. 17		Burrow, Bardon C.....April 29		Sedwick, Harry F.....June 5		Webster, William.....July 16	
Pender, Benjamin D. Jan. 31		Albert, John L.....Mar. 18		Miltimore, Wm. J.....April 29		Smalley, Isaac A.....June 5		Hannah, Maude.....July 17	
Arena, Antonio.....Feb. 1		Humphreys, Joe K.....Mar. 18		Roper, Stuart D.....April 29		Weiss, John.....June 5		Cady, Leo M.....July 18	
Arndt, August H.....Feb. 1		MacCormack, Eliza- abeth H.....Mar. 18		St. John, S. W.....April 29		Winegar, Otis E.....June 5		Mullane, Denis E.....July 18	
Evans, George H.....Feb. 1		Sylvester, Olin K.....Mar. 18		Smallwood, A. D.....April 29		Hutchings, Robert W. June 6		Bell, Ernest C.....July 20	
Farrar, Oliver S.....Feb. 1		Walsa, John J.....Mar. 18		Swab, Harry C.....April 30		Nylen, Charles A.....June 6		Brow, George.....July 20	
Healy, Frank V.....Feb. 1		Conrad, Herman.....Mar. 19		Barrows, C. B.....May 1		Cecil, Clyde.....June 8		Matthews, Charles H. July 21	
Thornton, Charles E. Feb. 1		Douglas, Mary L.....Mar. 19		Beaman, Don H.....May 1		Dillfil, Clarence W.....June 8		Freeman, Samuel.....July 22	
Oldfield, George W.....Feb. 3		Lewis, Louis.....Mar. 19		Boggs, Julian C.....May 1		Pease, Charles U.....June 9		Barth, George H.....July 23	
Martin, John A.....Feb. 4		Neal, Horace C.....Mar. 21		Milburn, Jas. W.....May 1		Dryden, George A.....June 10		Kotalik, John J.....July 23	
Avery, Alfred B.....Feb. 5		Good, Ed.....Mar. 23		Robinson, C. E.....May 1		Hurey, David W.....June 10		Hills, Fred C.....July 24	
Moser, Jack.....Feb. 5		Wilson, Frank E.....Mar. 24		Wilcox, Boss.....May 1		MacRae, Lloyd M.....June 10		Jervey, James P.....July 24	
Stevenson, Harry D. Feb. 5		Kelleher, Thomas P.....Mar. 25		Dulaney, Tobe.....May 2		Jones, Roy C.....June 12		Keller, Gustav W.....July 24	
Hahn, Charles F.....Feb. 7		Owens, Thomas R.....Mar. 25		Jewens, Nathan G.....May 2		Shepherd, Victor.....June 12		Mann, C. H.....July 24	
Corning, John M.....Feb. 8		Fein, John L.....Mar. 26		McGowan, Marie L. May 2		Lord, Charles G.....June 14		Bliss, George H.....July 25	
Walston, William H. Feb. 8		Jordan, Joseph T.....Mar. 27		Morgan, Robert P.....May 5		Mitchell, George W.....June 14		Ramey, William.....July 27	
Booz, Thomas H.....Feb. 10		Morton, George D.....Mar. 27		Spencer, J. G.....May 5		Naylor, Michael J.....June 14		Allen, George B.....July 29	
Cody, Michael J.....Feb. 10		Davidson, Edward H. Mar. 30		Teimer, Richard.....May 5		Pennman, Charles W. June 14		Anderson, Grant.....July 29	
Brown, Franklin M.....Feb. 12		Johnson, Isaac.....Mar. 30		Oberle, Edwin J.....May 6		Severn, Christopher J. June 14		Ferguson, Blanche K. July 29	
Hanna, John S.....Feb. 12		Lee, Dan.....Mar. 30		Kelly, John F.....May 7		Stanner, John T.....June 14		Hern, John F.....July 29	
Heslop, William J.....Feb. 12		McCarty, William S. Mar. 30		Martell, Harry C.....May 8		Sullivan, Bernard.....June 14		Louis, William U.....July 29	
Kerat, John.....Feb. 12		Myers, James A.....Mar. 30		Sala, Francis L.....May 8		Frampton, Charles M. June 17		Murphy, John J.....July 29	
Barney, James E.....Feb. 13		Norman, James.....Mar. 30		Pinto, Thomas J.....May 9		Shearer, Samuel G.....June 17		Schofield, Benj. A.....July 29	
Burns, Lee.....Feb. 13		Parks, William S.....Mar. 30		Braw, Fred J.....May 10		Deavours, John C.....June 18		Shaffer, Melvin C.....July 29	
Casey, Patrick J.....Feb. 13		Stoney, William E.....Mar. 30		Butler, John S.....May 10		Byrnes, James N.....June 19		Skinner, Frank.....July 29	
Grasley, Louis M.....Feb. 13		Vickerey, Wm. J.....Mar. 30		Crandall, Altmore L. May 10		Folcey, Arthur E.....June 19		Wilkins, John.....July 29	
Teese, Joseph W.....Feb. 13		Crawford, Wm. H.....April 1		McFee, Walter E.....May 10		McGeachy, Alexander June 19		Wilson, George M.....July 29	
Dougherty, Frank F. Feb. 14		Willett, Henry E.....April 1		Miller, Ora.....May 10		Mahoney, Joseph.....June 19		Allen, Everett W.....July 31	
Foley, Jeremiah R.....Feb. 14		McCallum, Geo. D.....April 2		Morton, Frederick E. May 10		Rosen, Morris.....June 19		Dundas, Harry.....Aug. 1	
Lewis, George W.....Feb. 14		Spencer, Geo. E.....April 2		Withrow, Robert E. May 10		Sasse, Harry O.....June 19		Lechler, Anthony J.....Aug. 1	
Moore, Joseph.....Feb. 14		Turrentine, Sam'l.....April 2		Grobe, William C.....May 12		Story, Albert R.....June 19		Miller, Harvey H.....Aug. 1	
Armstead, Howard.....Feb. 15		Angel, Jos.....April 3		Irwin, Don E.....May 12		Strobel, Louis.....June 19		Moore, John J. C.....Aug. 3	
Anderson, Francis G. Feb. 17		Barth, Frank G.....April 3		Dickinson, Thomas. May 13		Walter, John R.....June 19		McCown, William H. Aug. 4	
Bressie, Phillip N.....Feb. 17		Belknap, A. G.....April 3		Dogan, David.....May 15		Muldoon, Albert C. June 20		Pettit, John R.....Aug. 4	
Fulton, Ernest E.....Feb. 17				McLeod, John A.....May 15		Shoup, Vernon.....June 20			
Hunter, Alonzo.....Feb. 17									

(To be continued.)

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION. TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

MONTHS.	CULEBRA SECTION.*				CHAGRES SECTION.**			
	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.
Jan...	120,990	566,750	1,227,022	1,150,249	1,323,693	1,356,394	1,416,035	1,135,580
Feb...	168,410	639,112	1,246,265	1,194,454	1,259,173	1,409,338	1,349,569	996,800
Mar...	233,174	815,257	1,290,855	1,434,597	1,509,728	1,725,748	1,539,618	1,183,000
Apr...	196,209	579,365	1,242,574	1,272,746	1,288,845	1,414,336	1,455,216	1,178,000
May...	196,209	579,365	1,242,574	1,272,746	1,288,845	1,414,336	1,455,216	1,178,000
June...	196,209	579,365	1,242,574	1,272,746	1,288,845	1,414,336	1,455,216	1,178,000
July...	196,209	579,365	1,242,574	1,272,746	1,288,845	1,414,336	1,455,216	1,178,000
Aug...	196,209	579,365	1,242,574	1,272,746	1,288,845	1,414,336	1,455,216	1,178,000
Sept...	196,209	579,365	1,242,574	1,272,746	1,288,845	1,414,336	1,455,216	1,178,000
Oct...	196,209	579,365	1,242,574	1,272,746	1,288,845	1,414,336	1,455,216	1,178,000
Nov...	196,209	579,365	1,242,574	1,272,746	1,288,845	1,414,336	1,455,216	1,178,000
Dec...	196,209	579,365	1,242,574	1,272,746	1,288,845	1,414,336	1,455,216	1,178,000
Totals	2,702,991	9,177,130	13,912,453	14,557,034	15,398,599	16,596,891	15,049,413	4,494,280

ATLANTIC DIVISION.†

MONTHS.	GATUN LOCKS, DAM AND SPILLWAY.††				PEDRO MIGUEL LOCKS AND DAMS.†				BALBOA TUNNELS.‡			
	1909.	1910.	1911.	1912.	1909.	1910.	1911.	1912.	1909.	1910.	1911.	1912.
Jan...	102,690	125,011	65,889	1,330	83,726	27,320	15,680	24,969	61,202	31,479	48,744	47,426
Feb...	95,031	123,738	50,511	1,228	58,242	9,486	6,809	18,480	53,689	15,300	12,936	28,352
Mar...	90,051	132,007	51,431	254	95,624	6,784	674	1,777	60,060	12,148	79,751	29,094
Apr...	70,009	103,243	12,548	27,134	101,365	9,129	285	13,269	60,060	20,250	57,975	13,096
May...	52,766	82,958	17,677	24,280	57,523	10,405	5,905	26,018	55,653	21,994	38,023	7,906
June...	36,556	8,068	4,840	19,605	70,971	3,420	7,454	7,794	35,446	17,548	97,894	4,532
July...	39,058	95,503	6,997	1,974	77,503	4,410	6,273	4,412	31,803	8,590	96,112	14,107
Aug...	40,346	99,737	22,558	1,025	58,025	10,405	3,472	1,613	25,349	9,850	107,790	27,728
Sept...	49,945	103,440	3,489	1,025	39,002	7,433	5,365	1,257	18,644	84,894	7,728	3,310
Oct...	57,321	118,327	112	2,203	20,207	10,636	12,962	2,408	20,063	17,906	79,480	3,310
Nov...	63,452	94,552	16,677	1,732	28,342	11,195	17,320	3,176	511,933	194,639	878,577	310,481
Dec...	96,590	72,030	16,677	1,732	28,342	11,195	17,320	3,176	511,933	194,639	878,577	310,481
Totals	793,835	1,238,224	235,952	97,410	739,355	128,412	82,399	110,039	3,015	78,438	276,540	78,438

*Total to May 1, 1913, 93,025,517 cubic yards. Excavated 1904, 243,472 cubic yards; 1905, 914,254 cubic yards; 1906, 1,123,845 cubic yards; 1907, 192,769 cu. yds.; 1908, 3,787,992 cu. yds.; by sluicing, 188,239 cu. yds.

†Dry excavation Mendi Hills 1907-1912, 2,225,680 cubic yards. Dry excavation Balboa Locks and Dams, 1907, 78,233 cu. yds.; Balboa Locks and Dams, 1906, 1,340,179 cu. yds. in 1907; 2,774,561 cu. yds. in 1908.

††Total to May 1, 1913, 6,300,167 cubic yards; including 26,628 cu. yds. in 1906; 1,340,179 cu. yds. in 1907; 2,774,561 cu. yds. in 1908.

‡Total to May 1, 1913, 1,420,000 cubic yards; including 256,780 cu. yds. in 1908.

§Total to May 1, 1913, 2,833,510 cubic yards; including 846,920 in 1908.

¶Total to May 1, 1913, 525,371 cu. yds.; including 318,731 cubic yards in 1912.

WET EXCAVATION.

MONTHS.	ATLANTIC DIVISION.†				PACIFIC DIVISION.††			
	ATLANTIC ENTRANCE.‡				PACIFIC ENTRANCE.‡‡			
MONTHS.	ATLANTIC ENTRANCE.‡				PACIFIC ENTRANCE.‡‡			
	1908.	1909.	1910.	1911.	1908.	1909.	1910.	1911.
Jan...	490,701	521,050	510,455	520,181	460,450	469,529	518,936	379,810
Feb...	427,722	444,910	493,448	561,399	663,519	671,477	285,791	386,866
Mar...	546,886	461,208	412,325	391,736	783,281	865,696	462,588	639,761
Apr...	496,366	470,635	190,574	492,579	676,539	731,767	534,322	439,622
May...	564,396	315,370	447,578	514,178	530,466	720,753	484,509	548,047
June...	572,749	182,575	458,021	452,098	656,621	444,685	475,496	576,100
July...	625,497	348,451	423,092	425,195	696,170	733,181	515,782	520,692
Aug...	638,217	422,846	508,829	367,456	737,774	623,263	506,969	630,241
Sept...	624,776	410,574	451,873	420,434	750,080	662,976	455,059	534,667
Oct...	505,260	314,778	549,788	470,400	762,276	720,920	467,873	329,224
Nov...	679,604	457,889	600,708	742,242	609,089	627,791	425,870	116,94
Dec...	579,604	489,121	462,370	533,409	729,960	727,460	387,034	137,771
Totals	5,829,661	5,829,661	5,829,661	5,829,661	5,829,661	5,829,661	5,829,661	5,829,661

‡Bredging, Gatun Dam, 1907, 38,425 cu. yds.; Gatun Locks, 1908-13, 1,773,400 cubic yards.

††Miraflores Locks and Dam, 1909-12, 652,246 cu. yds.; to May 1, 1913, 652,246 cu. yds.

‡‡Total to May 1, 1913, 33,842,013 cu. yds.; including 4,049,379 cu. yds. in 1905-07.

§Total to May 1, 1913, 37,369,336 cu. yds.; including 3,820,175 cu. yds. in 1905-07.

¶Total to May 1, 1913, 1,552,060 cu. yds.

CONCRETE IN LOCKS AND DAMS.*

MONTHS.	GATUN LOCKS.†				PEDRO MIGUEL LOCKS.††				MIRAFLORES LOCKS.†‡			
	1911.	1912.	1913.	1914.	1911.	1912.	1913.	1914.	1911.	1912.	1913.	1914.
Jan...	72,919	34,983	28,085	38,513	15,003	4,652	24,011	48,416	50,456	50,456	50,456	50,456
Feb...	72,919	34,983	28,085	38,513	15,003	4,652	24,011	48,416	50,456	50,456	50,456	50,456
Mar...	72,919	34,983	28,085	38,513	15,003	4,652	24,011	48,416	50,456	50,456	50,456	50,456
Apr...	72,919	34,983	28,085	38,513	15,003	4,652	24,011	48,416	50,456	50,456	50,456	50,456
May...	72,919	34,983	28,085	38,513	15,003	4,652	24,011	48,416	50,456	50,456	50,456	50,456
June...	72,919	34,983	28,085	38,513	15,003	4,652	24,011	48,416	50,456	50,456	50,456	50,456
July...	72,919	34,983	28,085	38,513	15,003	4,652	24,011	48,416	50,456	50,456	50,456	50,456
Aug...	72,919	34,983	28,085	38,513	15,003	4,652	24,011	48,416	50,456	50,456	50,456	50,456
Sept...	72,919	34,983	28,085	38,513	15,003	4,652	24,011	48,416	50,456	50,456	50,456	50,456
Oct...	72,919	34,983	28,085	38,513	15,003	4,652	24,011	48,416	50,456	50,456	50,456	50,456
Nov...	72,919	34,983	28,085	38,513	15,003	4,652	24,011	48,416	50,456	50,456	50,456	50,456
Dec...	72,919	34,983	28,085	38,513	15,003	4,652	24,011	48,416	50,456	50,456	50,456	50,456
Totals	758,821	147,708	129,777	301,893	109,679	24,503	474,832	783,189	119,731	119,731	119,731	119,731

*Concrete in dams to May 1, 1913—Gatun spillway, 223,450 cu. yds. Miraflores dam and spillway, 28,170 cu. yds.; Pedro Miguel dam, 1,289 cu. yds. †1,002,523 cu. yds. in 1909 and 1910. ††478,893 cu. yds. in 1909 and 1910. ‡‡497,603 cu. yds. in 1909 and 1910.

FILL PLACED IN DAMS—1906-1913.

YEAR.	GATUN.				PEDRO MIGUEL.			
	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry
To January 1, 1911.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.
1911.	8,833,076	6,128,105	260,852	214,712	609,863	57,669	356,336	460,514
1912.	1,402,501	2,499,092	352,159	418,042	418,042	22,198	147,210	147,210
1913.	10,728,965	11,651,627	652,878	661,048	1,635,629	1,635,629	1,635,629	1,635,629
Total.	10,728,965	11,651,627	652,878	661,048	1,635,629	1,635,629	1,635,629	1,635,629

CANAL EXCAVATION TO DATE.

By French Companies. 78,146,960
French excavation useful to present Canal. 23,908,000
By Americans—
Dry excavation. 122,827,683
Dredges. 75,415,719

Total. 198,243,402
May 4 to December 31, 1904. 243,472
January 1 to December 31, 1905. 1,799,227
January 1 to December 31, 1906. 4,948,497
January 1 to December 31, 1907. 15,765,290
January 1 to December 31, 1908. 37,116,735
January 1 to December 31, 1909. 35,096,166
January 1 to December 31, 1910. 31,437,677
January 1 to December 31, 1911. 31,603,899
January 1 to December 31, 1912. 30,269,349
January 1 to May 1, 1913. 9,963,090

TOTALS BY DIVISIONS AND AMOUNT TO BE EXCAVATED.

DIVISIONS.	Amount excavated.		Remaining to be excavated.	
	8,826,365	44,480,203	87,752	3,441,574
Atlantic— Dry excavation. Dredges.	8,826,365	44,480,203	87,752	3,441,574
Central— All other points.	38,653,838	12,384,655	6,341,300	6,641,300
Pacific— Dry excavation. Dredges.	93,025,517	105,410,172	1,531,354	9,812,023
Grand total.	89,573,692	158,274,970	8,280,669	19,894,897

CRISTOBAL MOLE EXTENSION.

Breakwater at Terminal Docks To Be Nearly a Mile in Length.

By authorization made last July, the mole for the Atlantic terminal piers at Cristobal was to extend 3,250 feet from the initial station near the former shore line along Roosevelt avenue. The end is now 3,085 feet from the initial point. It has been decided to extend the mole, to serve as a breakwater, to a total length of 4,958 feet. The decision is based upon the probable need of such extension in future, for the erection of more piers, the protection to be afforded against heavy seas, and the possibility of doing it more cheaply now than later.

The principal element in the less cost at present will be the use of rock to be dredged from the channel and berth at the permanent coaling station on the island opposite Wharf 11. The site of the mole extension will furnish a convenient dumping place for the scows serving the dredges at the station, and it is believed that enough hard coral rock will be obtained to lay the entire base to a height of approximately 10 feet below the surface of the water. Inasmuch as this excavation and dumping must be done as a part of the coaling station construction, the fill will be made without cost for the piers. This method of placing a subaqueous base by dumping from dredge scows was successfully tried out in building the present mole, when the dipper dredge *Mindi* was working in the slip for dock No. 16. Less trouble was experienced with slides and settlements in building the upper levels over this area than occurred on the original breakwater, for which no subaqueous fill was made.

Between the present end of the mole and a point 3,680 feet from shore (Station 36 plus 80) the water is relatively shallow, over a ledge; beyond that point the soundings show a dropping off to depths as great as 40 feet. Estimates for the extension were accordingly made in two divisions.

The section used in estimating quantities is based upon information obtained from cross sections of the present breakwater, using a slope of 1:1½ above water and 1:2 below water on the south, or inside, face of the mole; and 1:1½ above water and 1:4 below water on the sea side. It is also assumed that the weight of new material would displace about 10 feet of mud under the center portion of the breakwater, gradually diminishing toward the slopes.

Following is the estimate for cost of dry filling, now, or in future, without the use of rock spoil dumped from the dredge scows:

Station 30 + 85 to Station 36 + 80:			
	Cu. Yds.		
Theoretical section.....	130,560		
Mud displaced.....	30,900		
End slope.....	10,400		
Total of.....	171,860 at \$.50....	\$85,930	
Hard rock armor on sea face.....	2,200 at \$1.00....	2,200	
		88,130	
Adding 10 per cent for slides and washouts due to severe northers during construction.....		8,813	
Total.....		96,913	
Station 36 + 80 to Station 49 + 58:			
	Cu. Yds.		
Theoretical section.....	382,000		
Mud displaced.....	94,600		
Total of.....	476,600 at \$.50....	\$238,300	
Hard rock armor on sea face.....	4,800 at \$1.00..	4,800	
		243,100	
Adding 10 per cent for slides, etc.....		24,310	
Total.....		\$267,410	
Grand total, both sections.....		\$364,353.00	

Saving will be made by the use of less dry fill, estimated to cost 50 cents per cubic yard. The cost of excavating from the Mount Hope borrow pit, and placing, has averaged about 46 cents per unit. The use of dredge spoil will diminish costs according to the following estimates:

Station 30 + 85 to Station 36 + 80:			
	Cu. Yds.		
Theoretical section.....	59,300		
End section.....	3,250		
Total of.....	62,550 at \$.50....	\$31,275	
Hard rock armor.....	2,200 at \$1.00....	2,200	
		33,475	
Adding 10 per cent for slides, etc.....		3,347	
Total.....		36,822	
Station 36 + 80 to Station 49 + 58:			
	Cu. Yds.		
Theoretical section.....	137,375 at \$.50....	\$68,687	
Hard rock on face.....	4,800 at \$1.00....	4,800	
		73,487	
Adding 10 per cent for slides, etc.....		7,348	
Total.....		\$80,835	
Grand total, both sections.....		\$117,657	

The saving to be effected by the use of dredge spoil will be about \$245,696. It is estimated that while one dipper dredge is operating at the coaling station site the subaqueous filling may be made from barges at the rate of 35,000 cubic yards a month, and that about 14 months will cover the placement of the requisite 500,000 cubic yards of subaqueous material. Such dry fill as will be needed can be supplied in place with the subaqueous fill without difficulty. The hard rock for armor will be specially selected, like that from Quebrancha quarry, or from the excavation in Sosa Hill for the Pacific terminals.

Balboa Sand Service.

A report of sand shipped from Balboa during April, follows:

DESTINATION.	Number cars.	Cubic yards.
Fifth Division.....	950	17,018
Atlantic Division.....	35	845
Mechanical Division.....	4	60
Central Division.....	54	842
First Division.....	7	105
Fortifications.....	292*	6,572
Panama Railroad.....	12	300
Panama Government.....	6	150
Miscellaneous.....	4	100
Total.....	1,364*	25,992

*Also two barges

Examinations by Board of Local Inspectors.

The Board of Local Inspectors will conduct examinations at the Administration Building, Ancon, on Wednesday, May 21, 1913, beginning promptly at 2 p. m., for persons desiring to secure the following classes of licenses: Pilots, masters, mates, marine engineers, chauffeurs and navigators of motor boats. All applicants for licenses must procure from the Executive Office, Ancon, forms for application and information respecting the filling out of same, not later than the day previous to the examination. In addition, all persons desiring chauffeur's licenses must bring automobile with them.

Missing Men.

Any one having information regarding the whereabouts of Luther D. Martin, whose service with the Commission terminated October 20, 1909, is requested to communicate with the American Legation, Panama.

Information regarding A. H., or Hart Chapman, concrete worker, thought to have been employed on Canal construction work in the fall of 1908, is sought by his father.

Replies should be mailed to Mrs. Lola Kelly, 202 Cedar street, Ottawa, Canada.

Any one having information regarding the whereabouts of Thomas James Kneeland, supposed to be on the Isthmus of Panama, is requested to communicate with the American Legation, Panama.

Any one having information regarding the whereabouts of William Wallace McCallum, who is supposed to be on the Isthmus, is requested to communicate with THE CANAL RECORD, Ancon.

PERSONAL.

Lieut.-Col. D. D. Gaillard sailed for the United States on the *Panama* on Wednesday, May 7, on his annual leave of absence.

Commissioner H. H. Rousseau, accompanied by his family, sailed on the *Parismina* on Tuesday, May 13, for Port Limon, Costa Rica, and from there will go to Cartago, where he will spend his annual leave.

Mr. Walter W. Warwick, formerly Examiner of Accounts with the Isthmian Canal Commission, was nominated by the President, on May 2, to be assistant controller of the treasury.

Mr. Henry Schoellhorn, mechanical engineer in the Mechanical Division, sailed for New York on the *Ancon*, on Friday, May 2, having been detailed to take charge of the inspection of the two new floating cranes which will be built for the Canal Commission at Duisburg, Germany. He will proceed to his post after a conference with Maj. F. C. Boggs, the general purchasing officer of the Commission at Washington. In his absence the advisory duties of mechanical engineer will be performed by Mr. W. R. McCann of the First Division.

Mr. A. A. Greenman, land agent for the Isthmian Canal Commission and Panama Railroad Company, has resigned, effective May 15, and, accompanied by his family, will sail for New York on the *Cristobal* on May 16. He entered the employ of the Panama railroad on the Isthmus as land clerk on November 11, 1908, and became the land agent of the railroad and Canal Commission on May 1, 1911.

Handicap Pistol Match.

During the monthly handicap match of the Culebra Pistol Club for the month of April, 1913, one of the members, Mr. Maurice W. Fox, made a target of 10 shots at 50 yards, with a Smith and Wesson pistol, 22 calibre, on standard American target, on which he scored 99 out of a possible 100.

Eight of the ten shots were all inside a 2½-inch diameter circle and all ten were within a 3½-inch diameter circle. This is the best record for a single target ever made by a member of the club and ties the world's record made by Thomas Anderton in 1903.

The power for operating the presses and other machinery at the Mount Hope printing plant was changed on Sunday, May 11, by the installation of a 35-horsepower electric motor in place of the gasoline engine which had hitherto given service. The motor was formerly in use in the Quartermaster Department's saw mill at Ancon. Electric current is obtained from the Gatun power plant, transformed at the Cristobal plant.

STEAMSHOVEL RECORDS.

Work of the Central Division Machines During the Month of April.

During the month of April, the total amount of material excavated in the Central Division was 1,179,100 cubic yards, of which 353,646 cubic yards were classified as earth, and 825,454 cubic yards as rock.

Of the total, 1,178,000 cubic yards were primary excavation in Canal prism, and 1,100 cubic yards were from ditch for draining the old Culebra dump. The total—1,179,100 cubic yards—was removed by steamshovels.

The high record for the month was made by shovel No. 221, working 32½ days in the Empire district, which excavated 52,639 cubic yards of earth.

The second best record for the month was made by shovel No. 206, working 40 days in the Culebra district, which excavated 50,864 cubic yards; 35,604 cubic yards of rock, and 15,260 cubic yards of earth.

The best record for a shovel of the 70-ton class was made by shovel No. 109, working 26 days in the Culebra district, which excavated 39,720 cubic yards, 15,888 of which were earth, and 23,832 rock.

Shovel No. 230, working in the Culebra district, made a high record for one day by excavating 2,736 cubic yards of rock on April 23.

Shovel No. 232, working on 12-hour shift in the Empire district, made a high record of 3,173 cubic yards of earth on April 28.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best records for the month and for one day are shown below:

BEST RECORDS FOR THE MONTH.
CULEBRA DISTRICT.

SHOVEL No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
206.....	15,260	35,604	50,864	40
219.....	23,495	23,495	46,990	40
204.....		45,723	45,723	27

EMPIRE DISTRICT.

221.....	52,639		52,639	32½
232.....	35,364	4,843	40,207	31
262.....		39,374	39,374	31½

BEST RECORDS FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
226	Empire.....	April 26	Rock.....	2,470
209	Empire.....	April 4	Rock.....	2,432
209	Empire.....	April 3	Rock.....	2,394
230	Culebra.....	April 23	Rock.....	2,736
204	Culebra.....	April 15	Rock.....	2,617
208	Culebra.....	April 2	Rock.....	2,600
208	Culebra.....	April 23	Rock.....	2,590

The excess number of days over and above the actual number of working days in the month of April (26), is due to double shift and night work.

Work of Lidgerwood Unloaders in April.

During the month of April, the following Lidgerwood trains and cars were unloaded by the Central Division:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa.....	5*	1,188	24,948
Miraflores.....	1	227	4,767
Gamboa.....	4	1,162	24,380
Total.....	10	2,577	54,095

*One unloader worked from the 21st to the 30th.

Misdirected Letters.

ANCON, C. Z., May 14, 1913.

The following insufficiently addressed letters, originating in the United States and its possessions, have

been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Barnett, Geo. G.	Kershaw, J. B.
Bates, W. W.	Le Blanc, Joe
Bryce, Herbert	Lorbeer, Dr. T. L. (2)
Burgos, Miss Ines	Manehim, Joseph
Byam, Joseph B.	McLoone, J. J.
Cloviss, Mrs. Ann (photo)	Owens, Thomas
Eddington, Lash	Palmer, T. B.
Fullinwider, E. R.	Robinson, James
Gillespie, Berkeley	Ross, Mrs. Chas. C.
Golby, James G.	Shambaugh, Dr. C.
Harding, Miss May	Sporer, Daniel G.
Henrich, Chris	Tabkersley, Mrs. Margaret
Hines, Mrs. Cement	Valleje, Cristobal
Hyslop, Mrs. Fannie S.	Van Brocklin, A. C.
Johnson, Joe	Wadlow, B. F.
Johnson, Albin J.	Watt, Henry A.
Johnson, Mailend A.	Zane, Mrs. H. J.
King, Henry E.	Ziegler, G. L.
King, Jno.	

The following ships arrived at, or departed from, the port of Balboa during the week ending May 10:

Arrivals—May 4, *Lyra*, from San Francisco; May 5, *Chile*, from Guayaquil; May 5, *Urubamba*, from Valparaiso; May 6, *Aysen*, from Valparaiso; May 9, *Santa Rita*, from San Francisco; May 10, *San Juan*, from San Francisco.

Departures—May 4, *Santa Maria*, to Port Harford; May 4, *Cuzco*, to San Francisco; May 5, *Guatemala*, to

Valparaiso; May 7, *Chile*, to Guayaquil; May 7, *Barraqueta*, to Valparaiso; May 9, *Luckenbach*, to San Francisco.

Status of Married Quarters.

Applications for family quarters on file April 30, were, as follows:

DISTRICT.	List No. 1.	List No. 2.
Ancon.....	10 (4)	100 (21)
Ancon Hospital.....	1 (1)	3
Balboa.....	1 (1)	48 (2)
Bas Obispo.....		23 (3)
Corozal.....	4	92 (7)
Cristobal.....	2	143 (6)
Culebra.....	4 (2)	27 (8)
Empire.....	6 (5)	105 (36)
Gatun.....	1	79
Gorgona.....		2
Las Cascadas.....		39 (8)
Pedro Miguel.....	2	60 (1)
Porto Bello.....		12 (6)
Toro Point.....	1 (1)	6
Total.....	32 (14)	739 (98)

NOTE—The figures in parentheses show the number of applicants already occupying regular or nonhouse-keeping family quarters at stations other than those at which applications are filed.

OFFICIAL CIRCULARS.

Decoration Day a Holiday.

CULEBRA, C. Z., May 13, 1913.

CIRCULAR No. 486:

Decoration Day, Friday, May 30, 1913, will be observed as a holiday in the Canal Zone, and as far as practicable, all public business will be suspended on that day.

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Acting Division Engineer, Central Division.

CULEBRA, C. Z., May 6, 1913.

CIRCULAR No. 485:

During the absence of Lieut.-Col. D. D. Gaillard, on leave, effective May 7, 1913, Mr. A. S. Zinn is designated Acting Division Engineer of the Central Division.

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Repair of Hand and Push Cars, Baggage and Station Trucks.

CULEBRA, C. Z., May 5, 1913.

*CIRCULAR No. 349-C:

Hand and push cars and baggage and station trucks will be repaired by the Mechanical Division in the Empire shops until further orders.

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission.

President, Panama Railroad Company.

Inspector of Shops to Pass on Artisans.

CULEBRA, C. Z., May 13, 1913.

CIRCULAR No. 262-G:

Whenever a reduction in the force of artisans employed in any division or department can be made, a list of the employees whose services can be dispensed with will be forwarded to the inspector of shops, and the latter will indicate the place and position to which they can be transferred, or recommend any other action to be taken. No artisans will hereafter be given five days' notice or discharged on account of reduction of force, until after the recommendation of the inspector of shops has been obtained.

The above will supersede Circular No. 262-E.

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission.

President, Panama Railroad Company.

Jumping On or Off Trains.

CULEBRA, C. Z., May 13, 1913.

CIRCULAR No. 379-A:

Section 2 of an ordinance adopted by the Isthmian Canal Commission July 18, 1912, approved by the Secretary of War, August 6, 1912, and which became effective thirty days after its approval by the Secretary of War is, as follows:

It shall be unlawful for any persons except members of a train crew, and construction and transportation officials and employees engaged in the performance of their duties, to jump off or on a railroad locomotive, car, or train while same is in motion, or to ride on the roof or platform of a car of such train. Any person thus offending shall be fined not to exceed ten dollars for each offense.

The permission given to construction and transportation officials and employees engaged in the performance of their duties, to jump on or off locomotives, cars, or trains in motion shall be construed to apply only to

such officials and employees as have received this permission in writing from the head of their department or division.

GEO. W. GOETHALS, Chairman.

Celebration of Independence Day.

CULEBRA, C. Z., May 7, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

You are requested to appoint one or more officers of your department or division to attend a meeting to be held at the Administration Building, Ancon, on Saturday, May 17, at 2.30 p. m., to consider the question of a Fourth of July celebration by Americans on the Isthmus of Panama on July 4, 1913.

Among the questions to be decided are:

1. Shall such a celebration be held?
2. If so, where; and what shall be the general program of the celebration or celebrations?
3. Organization for making necessary arrangements, raising subscriptions, etc.

Such celebrations are intended to be arranged by and for the benefit of Americans on the Isthmus, and it is intended that any celebration held shall be carried out in accordance with the wishes of the majority of the American employees of the Isthmian Canal Commission and Panama Railroad Company. Please advise me as soon as practicable whom you designate to attend this meeting (who will be expected to act on this committee until further notice). Your representatives should be instructed to canvass the sentiment among the employees in their respective departments or divisions prior to the meeting on May 17, so that they may be able to act with as full knowledge of the views of those whom they represent at the meeting on May 17 as practicable. The Disbursing Officer of the Commission will be a member *ex officio*, and any head of department or division may likewise act on this committee *ex officio* and be present at the meeting. The committee is authorized to appoint any additional members to act with it.

Commissioner M. H. Thatcher is appointed general chairman of the Fourth of July celebration committee.

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Committee on Maintenance of the Canal.

CULEBRA, C. Z., May 9, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

The committee appointed to investigate and recommend plans for the maintenance of the Panama Canal is authorized to call upon heads of departments and divisions of the Isthmian Canal Commission and officials of the Panama Railroad Company for such data as may be required in connection with the preparation of such plans.

Lieut.-Col. William L. Sibert will act as chairman of this committee, during the absence on leave of Lieut.-Col. D. D. Gaillard.

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission.

President, Panama Railroad Company.

Constructing Quartermaster.

CULEBRA, C. Z., May 7, 1913.

All Concerned—Effective at once, Mr. C. B. Cook will be in charge of the repair and construction of buildings of the Quartermaster's Department, and will in the future perform all the duties heretofore performed by the Constructing Quartermaster.

GEO. W. GOETHALS, Chairman.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule of moving picture entertainments for the week May 19 to 24 is, as follows: Monday, Culebra; Tuesday, Empire; Wednesday, Corozal; Thursday, Cristobal; Friday, Gatun and Porto Bello; Saturday, Gorgona.

The standing of the teams in the Isthmian Duckpin Bowling League, at the end of the tournament was, as follows:

Teams.	Won.	Lost.	P. C.
Empire.....	21	9	.700
Gorgona.....	18	12	.600
Cristobal.....	17	13	.567
Culebra.....	16	14	.533
Gatun.....	14	16	.467
Corozal.....	4	26	.133

The standing of the Indoor Baseball League, as of May 10 is, as follows:

Teams.	Won.	Lost.	P. C.
Camp Elliott.....	3	0	1.000
Gatun.....	3	0	1.000
Cristobal.....	1	2	.333
Corozal.....	1	2	.333
Empire.....	1	2	.333
Gorgona.....	0	3	.000

The standing of the teams in the American Duckpin League, as of May 12 is, as follows:

Teams.	Won.	Lost.	P. C.
Empire.....	16	8	.636
Cristobal.....	15	9	.625
Corozal.....	8	13	.381
Gatun.....	6	15	.286

The return dates of the Apollo Concert Company are, as follows: May 13, Empire; May 14, Ancon; May 15, Corozal; May 16, Gatun; May 19, Gorgona; May 20, Cristobal; May 21, Culebra.

The Mary E. Lyon Concert Company will arrive on the Isthmus on May 16, and will give a series of entertainments at the clubhouses.

COROZAL.

Corozal lost three games of duckpins and one game of indoor baseball to Gatun teams on Saturday night.

CULEBRA.

Reserved seats for the entertainment to be given by the Apollo Concert Company on Wednesday night, May 21, will be on sale Monday morning, May 19. Doors will be open at 7.30 o'clock, and the program will begin at 8 sharp.

Permission has been granted by the Panama Railroad Company for the use of the special sightseeing train through the Cut and over the locks on May 30. The fare on this train from Gatun to Panama will be \$1.50 each to Y. M. C. A. members and their friends. A committee, consisting of Messrs. Fleischman, Leydecker, Cain, Chadbourn, and Hansli, has been appointed to take signatures and the money, which must be in hand on or before May 20. Further details will be made known later by bulletin.

High scores for the week in duckpins were, as follows: Case 100, 109, 104, 111, 110, 113; Bechlem 109; Ferguson 100; Koperski 102.

EMPIRE.

Mr. Samuel Verner of Bas Obispo gave an interesting talk on his travels in South Africa on Sunday evening, May 11. On a later date Mr. Verner will give another talk, when pictures illustrating his travels will be shown.

The indoor baseball game between Empire and Cristobal played on Saturday, May 10, was won by Empire, the score being 12 to 11.

A Spanish class for beginners will be started as soon as five members are procured. The class will meet Wednesday and Friday mornings from 9.30 to 10.30.

GORGONA.

The subject of the debate on Friday evening, May 9 was: "Resolved, That all American coastwise vessels

should pass through the Canal free of tolls." The question was affirmed by Messrs. Kramer and Col. Ewing; and denied by Messrs. Wright and Patterson. The negative side won. The next meeting will be on Thursday of next week.

Gymnasium classes will be started on Tuesday evening. All who are interested in exercises, and physical development of the body are urged to join.

Empire took three straight games from Gorgona on Saturday night. This closes the duckpin tournament, and gives Empire the team medals. Mr. King of Gorgona will get high average, and Mr. Sims second place for high average. Scores follow:

Gorgona.	Empire.
Sims.....	97 98 85
Dens.....	93 84 86
Dunlap.....	85 90 100
Lowe.....	82 86 90
Davis.....	101 89 74

Total..... 458 447 435 475 474 455
100-games: Dens 104, 100; Dunlap 108; King 101, 103.

GATUN.

Empire took two out of the three games from Cristobal on the Gatun alleys in the American duckpin league on Saturday, May 10. Scores:

Cristobal.....	434.....	436.....	412
Empire.....	434.....	482.....	463

In the first game the roll-off was won by Cristobal, 54 to 45.

Gatun has won every game in the indoor baseball league so far, having taken games from Empire, Gorgona, and Corozal. The Corozal game was won by a score of 22 to 16. The next game will be with the Marines at Camp Elliott, on Saturday, May 9.

The current topics club held its first meeting on Wednesday, May 14, when the Japanese land bill was discussed.

Tuesday, May 9, was ladies' night on the bowling alley. Prizes were won by Miss Schmidt and Mr. Hodges.

CRISTOBAL.

Tickets for the Apollo Concert Company's return engagement on May 20 will be on sale Friday of this week.

In the last series in the Isthmian Bowling League, the local team took two out of three games from Culebra. Scores follow:

Culebra.	Cristobal.
Case.....	100 82 88
Silvers.....	92 83 79
Durand.....	89 86 83
Palmer.....	98 94 77
Kiernan.....	102 84 102
Herrington.....	97 88 89
Weston.....	78 79 83
Collins.....	80 87 99
Smith.....	99 109 106
Bullard.....	79 96 92
481 429 429	442 459 469

Mr. Childers of Gatun gave a lecture here on Wednesday night, with about 60 present. His topic was "The natural law in the world of labor."

The Cristobal baseball team went to Empire last Saturday night and was defeated in a close game by a score of 12 to 11. The score was tied until the last inning.

The moving pictures will be held on Friday night this week.

The Corozal indoor baseball team will play here Saturday night. All the Cristobal "fans" are urged to come out.

The Young People's Society of the Cristobal Union Church gave a stereopticon lecture on "The Other Wise Man," on Tuesday, May 9.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending May 10:

Tivies, May 4, from New York, with 26 cases game moving machinery, First Division; 200 pieces car wheels, Mechanical Division; 51 pieces iron pipe, Atlantic Division; 10 cases sheet copper, fortifications;

200 bundles bar iron, 20 cases pipe magnesia, 16 bundles rakes, 10 cases fittings, for stock.

Trent, May 4, from New York, with 3 cases hardware, for stock.

Heredia, May 5, from New Orleans, with 861 pieces lumber, Mechanical Division; 335 bales hay, 150 acks dairy feed, 1,611 pieces cross-ties, 32 pieces piling, 9,915 pieces lumber, for stock.

Lyra, May 5, from San Francisco, with 39 cases babbitt metal, 20 cases bar solder, 13 cases sheet lead, 32 bales rubber hose, 1,222 pieces redwood, 2,256 cases Trojan powder, for stock.

Prinz August Wilhelm, May 5, from New York, with 205 kegs bolts and rivets, for stock.

Jamaican, May 6, from Liverpool, with 12 pieces bucket links, 8 packages dredge parts, for Sixth Division.

Cristobal, May 6, from New York with 141,320 bags cement, Atlantic and Fifth Divisions; 21 cases wedges, 195 cases incandescent lamps, 296 pieces car couplers, 10 cases hardware, for Mechanical Division; 41 reels cable, Panama Railroad Company; 34 cases machinery, Atlantic Division; 58 cases conduit material, 20 packages electrical material, First Division; 20 reels wire, Fifth Division; 10 cases castings, First Division; 100 pieces pipe, 32 crates sledge handles, 14 packages chains, 55 bundles steel bars, 13 cases forges, 10 kegs nuts, 10 cases drill parts, 50 cases alcohol, for stock; 10 cases machinery, for Sixth Division

Zacapa, May 7, from New York, with 250 pieces car wheels, Mechanical Division; 9 cases castings, First Division; 30 pieces iron pipe, 6 cases pipe-fittings, Fifth Division; 20 cases putty, 150 kegs boat spikes, 1,060 sacks oats, 126 coils wire, 6 cases sheet brass, for stock.

Allianca, May 7, from New York, with 111 cases sales books, 53 barrels whitening, 63 coils lead pipe, 40 cases Japan dryer, 30 crates galvanized buckets, 1,300 kegs wire nails, 100 cases soap, 18 barrels paint, 50 pieces channels, 45 kegs nuts, 21 cases files, 20 cases lamp chimneys, 17 reels wire rope, for stock; 64 barrels alcohol, 20 cases gauze, 67 cases drugs and sundries, for Sanitary Department; 20 reels electrical cable, First Division; 40 barrels batteries, 23 pieces steel rails, 17 bundles splice bars, Panama Railroad Company; 18 crates valves, Atlantic Division; 214 pieces car couplers, 145 barrels sand, Mechanical Division; and a miscellaneous cargo, the whole consisting of 3,080 packages, weighing 450 tons.

Glencoe, May 7, from Baltimore, with 103 cases blasting caps, 330 bundles brooms, 315 tons coke, for stock; 960 pieces bars and plates, 73 kegs rivets, Second Division; 37 pieces cast iron pipe, Atlantic Division; 36 pieces car wheels, 376 tons pig iron, Mechanical Division; 829 pieces structural steel, Panama Railroad Company; 900 tons structural steel, emergency dams; 540 tons structural steel, Balboa shop buildings.

Atenas, May 8, from New Orleans, with 802 pieces cross-ties, 119 pieces lumber, for stock; 1,792 pieces lumber, Mechanical Division.

Californian, May 8, from New York, with 178,602 bags cement, Fifth Division; 20 cases benzine, for stock.

The total value of material received during the month of April was \$1,324,607.32, which came forward in 38 steamers, total weight of cargo, exclusive of lumber, piling, and cross-ties being 40,000 tons. The value of material received for stock was \$427,807.15.

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday, and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

LOST—On March 5, 1913, between Cristobal police station and Mount Hope storehouse, a Howard watch, hunting case, 25-year. Liberal reward if returned to C. M. Shute, Quartermaster's Department, Mount Hope.

CLASSIFIED EXPENDITURES—ISTHMIAN CANAL COMMISSION.

A statement of classified expenditures of the Isthmian Canal Commission to February 28, 1913, follows:

PERIODS.	Department of Civil Administration.	Department of Law.	Department of Sanitation.	Department of Construction and Engineering.	General Items.	Fortifications.	Total.
Total to June 30, 1909.....	3,427,090 29		9,673,539.28	69,622,561.42	78,022,606.10		160,745,797.09
Total—Fiscal Year, 1910.....	709,351.37		1,803,040.95	26,300,167.05	2,863,088.83		31,675,648.20
Total—Fiscal Year, 1911.....	755,079.44		1,717,792.62	27,477,776.19	3,097,959.72		33,048,607.97
Total—Fiscal Year, 1912.....	820,498.57	24,729.16	1,620,391.12	28,897,738.10	2,819,926.53	1,212,881.66	35,396,065.14
July, 1912.....	63,913.12	1,448.53	123,803.64	2,649,246.61	200,970.55	104,126.92	3,143,509.37
August, 1912.....	62,182.51	1,468.26	123,154.48	2,539,686.83	*98,054.61	111,402.55	2,739,834.02
September, 1912.....	59,201.01	1,207.82	120,385.70	2,285,979.89	77,003.53	127,168.25	2,670,946.20
October, 1912.....	64,383.37	2,033.75	137,574.61	2,473,280.76	83,523.30	129,736.37	2,890,532.16
November, 1912.....	62,200.12	1,892.14	119,031.66	2,420,085.77	75,779.01	300,016.33	2,979,005.03
December, 1912.....	58,987.96	1,462.18	115,819.26	2,871,977.03	120,946.61	118,152.57	3,287,345.61
January, 1913.....	57,699.58	1,469.59	114,562.04	2,825,872.06	6,463.72	119,272.77	3,125,339.76
February, 1913.....	56,586.06	1,649.00	127,324.80	3,784,370.51	123,034.12	314,994.96	4,407,959.45
Grand total.....	6,197,073.40	37,360.43	15,796,420.16	174,148,736.22	87,393,247.41	2,537,752.38	286,110,590.00

*Denotes credit.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning May 12, 1913:

FRESH MEATS.		Price.
Mutton—Stewing, per pound.	6	
Shoulder, neck trimmed off (4 pounds and over), per pound.	9	
Entire forequarter (not trimmed, 10 pounds and over), per pound.	8	
Leg (8 to 10 pounds), per pound.	17	
Cutlets, per pound.	18	
Short cut chops, per pound.	20	
Lamb—Stewing, per pound.	6	
Entire forequarter, neck trimmed off, per pound.	9	
Legs (5 to 8 pounds), per pound.	20	
Chops, per pound.	24	
Cutlets, per pound.	24	
Veal—Stewing, per pound.	10	
Shoulder, for roasting (not under 4 pounds), per pound.	12½	
Chops, shoulder, per pound.	17	
Chops, per pound.	26	
Loin for roasting, per pound.	26	
Cutlets, per pound.	30	
Pork—Loin chops or roast, per pound.	17	
Pigs Head, about 6½ lbs., per pound.	10	
1½ lbs., per pound.	10	
Pigs Backbone, per pound.	15	
Beef—Suet, per pound.	2	
Soup, per pound.	5	
Stew, per pound.	8	
Plate, per pound.	9	
Corned, No. 1, per pound.	14	
Corned, No. 2, per pound.	12	
Chuck, roast, 3 lbs. and over, per pound.	12	
Rib roast, second cut (not under 3½ pounds), per pound.	16	
Rib roast, first cut (not under 3 pounds) per pound.	18	
Sirloin roast, per pound.	19	
Rump roast, per pound.	19	
Porterhouse roast, per pound.	20	
Steak, Chuck, per pound.	12½	
Round, per pound.	13	
Rib, per pound.	18	
Sirloin, per pound.	19	
Rump, per pound.	19	
Porterhouse (not less than 1½ pounds), per pound.	20	
Tenderloin (Western) per pound.	30	
MISCELLANEOUS.		
Livers—Beef, per pound.	11	
Calf, each.	60	
Half, each.	30	
Steak, Hamburger, pkg.	13	
Sausage—Bologna, per pound.	13	
Frankfurter, per pound.	13	
Lieberwurst, per pound.	13	
Devonshire Farm, per pound.	20	
Pork sausage meat, per pound.	20	
Sweetbread, beef, per pound.	40	
Eggs, fresh, dozen.	25	
one-half dozen only.	13	
Bluefish, per pound.	15	
Halibut, fresh, per pound.	15	

POULTRY AND GAME.

Chicken—Fancy roasting, milk fed, large, each.	1.40
Fancy roasting, milk fed, med., each.	1.10
Fancy roasting, corn fed, about 5½ pounds, each.	1.25
Fancy roasting, corn fed, about 4½ pounds, each.	1.00
Fowls, each.	†60, 70, 80, 90.
Ducks, (Western, about 4½ pounds), each.	1.25
Broilers, milk fed, each.	70
Broilers, corn fed, each.	60
Turkeys, per pound.	26
Squabs, each.	50
Rabbits, skinned, each.	30
Ducks, blackhead, pair.	60
Partridges, pair.	1.30
Grouse, per pair.	1.30
Pheasants, per pair.	1.30

CURED AND PICKLED MEATS.

Ham—Sugar cured, per pound.	20
Sliced, per pound.	22
Boiled, for boiling, per pound.	21
Boiled, per pound.	28
Hocks, per pound.	38
Beef, salt, family, per pound.	12
Bacon—Breakfast, whole piece, per pound.	25
Sliced, per pound.	26
Ham, lunch, per pound.	32
Pork, salt, family, per pound.	14
Ox tongues, each.	1.00
Pigs feet, per pound.	9
Tongues, per pound.	18

DAIRY PRODUCTS.

Butter—Creamery, special, per pound.	40
Sheffield Farms, extra fancy, per lb.	46
Cheese—Philadelphia cream, cake.	10
Roquefort, per pound.	35
Young America, per pound.	22
Swiss, per pound.	28

Cheese—Edam, each.	1.00
Parmesan, per pound.	35
Gouda, per pound.	*30
Snappy, per cake.	10
Milk (Certified), per bottle.	**20
Fer-mil-lac, bottle.	**20
Ice cream, quart.	25
½-gallon.	150

VEGETABLES AND FRUITS.

Beets, per pound.	3
Celery, per head.	11
Cabbage, per pound.	3
Cucumbers, per pound.	14
Carrots, per pound.	3
Egg Plant, per pound.	10
Lettuce.	*12
Onions, per pound.	3
Potatoes, white, per pound.	3
sweet, per pound.	2
Parsnips, per pound.	3½
Parsley, bunch.	5
Rhubarb, per pound.	4
Squash, per pound.	7
Turnips, per pound.	3
Tomatoes.	10
Apples, per pound.	5
Grape fruit, tropical, each.	4
American, each.	8
Lemons, dozen.	24
Limes, per 100.	80
Oranges, Jamaica, per dozen.	12

*Indicates reductions from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advance on last list.
‡Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock, next lightest weight is supplied and refund note sent for difference.
§Sold only from commissaries; no orders taken for delivery.

Rainfall from May 1 to May 10, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section -</i>			
Ancon	1.66	9	2.62
Balboa	1.28	9	2.66
*Miraflores.	1.90	8	2.55
Pedro Miguel.	2.36	7	4.46
Rio Grande.	2.02	7	3.11
<i>Central Section -</i>			
Culebra	2.00	7	2.70
*Camacho. . . . .	.99	7	1.87
Empire. . . . .	.49	7	1.34
Gamboa. . . . .	.98	8	2.23
*Juan Mina	2.02	7	3.22
Alhajuela.	1.33	8	3.17
*El Vigia	1.32	7	2.74
*Gorgona.	1.27	7	2.46
*Frijoles. . . . .	.56	3	2.00
*Monte Lirio.	1.19	9	2.18
<i>Atlantic Section -</i>			
Gatun.	1.51	2	2.17
*Brazos Brook.	1.13	2	2.02
Colon.	1.58	2	2.22
Porto Bello.	1.41	7	3.43

*Standard rain gage—readings at 5 p. m. daily.
Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., May 9.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, May 10, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela.	Gamboa.	Gatun Lake.
Sun., May 4.	126.9	93.3	49.5	49.5
Mon., May 5.	126.0	92.4	49.6	49.5
Tues., May 6.	125.9	92.2	49.7	49.6
Wed., May 7.	126.5	92.6	49.5	49.5
Thurs., May 8.	127.1	92.8	49.4	49.4
Fri., May 9.	127.3	93.4	49.4	49.3
Sat., May 10.	126.0	92.3	49.2	49.2
Height of low water to nearest foot.	125.0	91.0	44.0	

Auction Sale of Dairy Cows.

ANCON HOSPITAL, May 3, 1913.

On Saturday, May 31, 1913, at 9 a. m., there will be sold at public sale at the Ancon Hospital dairy, eight dairy cows between three and nine years of age. Also one brown Swiss bull eight years old and a young bull calf. Terms of sale, cash.
The dairy is located near the insane asylum buildings in the rear of the hospital grounds.

CHAS. F. MASON, Superintendent.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Advance.	P. R. R.	Tuesday.	May 13
Panama.	P. R. R.	Tuesday.	May 20
Allianca.	P. R. R.	Monday.	May 26
Colon.	P. R. R.	Monday.	June 2
Advance.	P. R. R.	Saturday.	June 7
Panama.	P. R. R.	Friday.	June 13

CRISTOBAL TO NEW YORK.

Colon.	P. R. R.	Monday.	May 19
Advance.	P. R. R.	Monday.	May 26
Panama.	P. R. R.	Sunday.	June 1
Allianca.	P. R. R.	Saturday.	June 7
Colon.	P. R. R.	Saturday.	June 14
Advance.	P. R. R.	Thursday.	June 19

NEW YORK TO COLON.

Almirante.	U. F. C.	Wednesday.	May 7
Prinz Joachim.	H. A.	Saturday.	May 10
Carrillo.	U. F. C.	Saturday.	May 10
Magdalena.	R. M.	Saturday.	May 10
Santa Marta.	U. F. C.	Wednesday.	May 14
Carl Schurz.	H. A.	Saturday.	May 17
Pastores.	U. F. C.	Saturday.	May 17
Metapan.	U. F. C.	Wednesday.	May 21
Prinz August Wilhelm.	H. A.	Saturday.	May 24
Tivives.	U. F. C.	Saturday.	May 24
Tagus.	R. M.	Saturday.	May 24
Zacapa.	U. F. C.	Wednesday.	May 28
Emil L. Boas.	H. A.	Saturday.	May 31
Sixaola.	U. F. C.	Saturday.	May 31
Prinz Joachim.	H. A.	Saturday.	June 7
Oruba.	R. M.	Saturday.	June 7

COLON TO NEW YORK.

Zacapa.	U. F. C.	Thursday.	May 15
Sixaola.	U. F. C.	Tuesday.	May 20
Emil L. Boas.	H. A.	Wednesday.	May 21
Almirante.	U. F. C.	Thursday.	May 22
Oruba.	R. M.	Tuesday.	May 27
Prinz Joachim.	H. A.	Tuesday.	May 27
Carrillo.	U. F. C.	Tuesday.	May 27
Santa Marta.	U. F. C.	Thursday.	May 29
Pastores.	U. F. C.	Tuesday.	June 3
Carl Schurz.	H. A.	Wednesday.	June 4
Metapan.	U. F. C.	Thursday.	June 5
Tivives.	U. F. C.	Tuesday.	June 10
Prinz August Wilhelm.	H. A.	Tuesday.	June 10
Zacapa.	U. F. C.	Thursday.	June 12

NEW ORLEANS TO COLON.

Turrialba.	U. F. C.	Saturday.	May 10
Cartago.	U. F. C.	Wednesday.	May 14
Abangarez.	U. F. C.	Saturday.	May 17
Heredia.	U. F. C.	Wednesday.	May 21
Atenas.	U. F. C.	Saturday.	May 24
Parismina.	U. F. C.	Wednesday.	May 25
Turrialba.	U. F. C.	Saturday.	May 31

COLON TO NEW ORLEANS.

Atenas.	U. F. C.	Thursday.	May 15
Parismina.	U. F. C.	Saturday.	May 17
Turrialba.	U. F. C.	Thursday.	May 22
Cartago.	U. F. C.	Saturday.	May 24
Abangarez.	U. F. C.	Thursday.	May 29
Heredia.	U. F. C.	Saturday.	May 31

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays at 3 p. m.; ships for New York via Kingston on Tuesdays at 10 a. m. and Thursdays at 10 a. m.; for Bocas del Toro on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct, Tuesdays at 3 p. m.

The Panamanian Steamship Company's steamer *Panama* will sail from Panama for Aguadulce and Pedregal on May 17 and 27.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending May 10, 1913 (75th meridian time):

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	P.M.	P.M.	P.M.
May 18.	1.40	7.56	2.07	8.25	
May 19.	2.41	8.47	2.55	9.15	
May 20.	3.30	9.35	3.41	10.00	
May 21.	4.15	10.21	4.25	10.46	
May 22.	5.00	11.07	5.08	11.31	
May 23.	5.43	11.52	5.52		
		P.M.			
May 24.	12.16	6.27	12.37	6.36	



The Canal Record

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Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission to the Secretary of War for the month of April is published in full in this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work on all departments and divisions.

Record 48-Hour Rainfall at Porto Bello.

Precipitation was general over the Isthmus during the week ending May 17, and was unusually heavy along the Atlantic coast.

At Porto Bello on May 14-15, 10.65 inches of rain fell during a period of 24 consecutive hours.

This 24-hour record has been exceeded on the Isthmus once only during the period covered by the Commission records. This was at Porto Bello also—on December 28-29, 1909—when 10.86 inches of rain fell in 24 hours.

The 48-hour rainfall at Porto Bello on May 15 and 16, amounted to 16.76 inches, which exceeded any previous record on the Isthmus for a period of 48 consecutive hours.

Isthmian rainfall records in excess of 10 inches in 24 hours are, as follows:

STATION.	Amount	Date.
Gatun	10.48 inches.	Dec. 2-3, 1906
Porto Bello	10.86 inches.	Dec. 28-29, 1909
Porto Bello	10.65 inches.	May 14-15, 1913

Auxiliary Crusher at Ancon Quarry Plant.

Output from the Ancon crusher has been principally 2 and 3-inch and larger rock for mass concrete and road work. In the course of crushing it, a proportion of smaller rock was produced and screened out which was sufficient for the reinforced concrete. The impending work on the terminals and permanent buildings, however, will require a greater supply of small rock, and a gyratory crusher which will reduce No. 1 rock to No. 2 and screenings is being installed in the south end

of the storage bin of the present plant. The belt conveyor which distributes the larger rock over the bin will feed the crusher direct through a chute.

The smaller crusher is the Gates "K" type of the Allis Chalmers Company, with a normal capacity of about two hundred cubic yards in eight hours. It was part of the abandoned crusher plant at Rio Grande. At the Ancon plant, it is mounted on the reinforced concrete floor of the bin, and will discharge direct into dump cars.

Material for Fills.

It has been estimated that about 1,900,000 cubic yards of material will be available for dumping, south of Culebra Cut, from now until October 1, or a little over one-third the amount necessary to complete the dumps that are being filled at the present time, namely, 5,445,000 cubic yards. In view of this fact, the Chief Engineer has established the following order of preference in continuing these fills:

	Est. Quantity. Cubic yards.
1. Pedro Miguel townsite.....	460,000
2. Naos Island breakwater.....	1,050,000
3. Balboa wye.....	150,000
4. Ancon-Sosa fill.....	50,000
5. Fill south of Miraflores power house.....	600,000
Total.....	2,310,000

This will leave the following dumps to be filled with the remainder of the material available before October 1, and any material available from the Culebra Cut section after that date:

	Est. Quantity. Cubic yards.
1. Two dumps, north of Miraflores tunnel.....	625,000
2. Balboa dump.....	2,450,000
3. Curundú River dump.....	60,000
Total.....	3,135,000

The Curundú River dump will not be required for about a year, and work on this fill will probably be postponed until some time after October 1, and then only if material is available, for, if necessary, this fill can be made with material obtained from other than Canal excavation.

Movement of Squatters in Canal Zone.

In order to prevent further immigration of squatters into the Canal Zone, the movement of squatters from one part of the Zone to another, and the emigration of residents of the Canal Zone settlements to the jungle within Zone boundaries, the chief of police has been charged with the duty of maintaining a patrol, both by land and water, so far as the use of the force under him for this purpose will permit. It is proposed to establish regular patrols at suitable intervals on all trails, as well as on Gatun Lake, the streams tributary thereto, and other navigable waters. The work will probably be simplified by dividing the territory into districts, with one patrol to each district. This

patrol will prepare a list of the residents in his district, which will enable him to keep informed of the changes of residence of any of them. Notices will be printed and distributed, and posters will be placed along the public highways advising all concerned.

The Panama Government has provided a new townsite at Yegualita, a point on the coast about 22 miles west from Panama city, for the native people leaving the Zone, and has requested the use of a Commission tug to transport the people and their effects to the new location. The request will probably be granted, the tug landing its passengers at Punta Chamé village, which is only a short distance from the new town.

New General Superintendent, Panama Railroad.

Capt. John D. Patterson of Atlanta, Ga., assumed the duties of General Superintendent of the Panama railroad on May 19, vice Mr. J. A. Smith, resigned. Capt. Patterson was lately superintendent of joint terminals in Atlanta and in his career has had experience in practically every operating department of a railroad.

Fill for New Pedro Miguel Townsite.

The fill for the new Pedro Miguel townsite will be begun as soon as the dump track, which branches off from the Panama railroad relocation just south of the station, is laid. The dumping operations are to cover eventually three separate areas, one of which is east and two are west of the relocated line. The largest area lies east of the track, and will extend from the railroad as far east as the rising ground back of the last row of American quarters; north to nearly on the line with the police station, involving the removal of nine native houses, and a store; and south as far as the Pedro Miguel River. The dirt trains will probably come in on the main line at Paraiso Junction, and then follow it south to the dump track switch.

It is planned to make the fill east of the track, to the height of about 67 or 70 feet above sealevel at the north edge, giving it a gradual slope to about 63 or 65 feet at the south and east edges. As the fill is completed along the west side of the first row of American quarters, the houses will be raised and moved by the Quartermaster's Department to the newly made ground directly west. As soon as this part of the area has been completed, the location of the dump track will be changed, and operations extended to the easterly limit, the houses in the second row of quarters to be raised and moved west, occupying on the new fill the present sites of the houses in the first row. The hotel, and house No. 106, both two-story buildings, will probably be raised, and the fill under them made by hand, rather than to attempt to move them.

The two fills to be made on the west side of the main line track, one between the railroad and the Central Division tracks, north to the

old Panama railroad station, and south to the Pedro Miguel River; and the other, west of the Central Division tracks, extending north to, but not including the present American quarters, and south to and including the site of the engine shed, will close the gap between the relocated line and the lock backfill. These fills will not be made, however, until later, probably not until the Central Division tracks are abandoned, and it is possible that instead of making these fills in the dry, they will be made with suction dredge pumping from the Canal prism between Pedro Miguel and Miraflores Locks, where it is proposed to leave the excavation to the depth of five feet for the dredges to remove.

It is estimated that the fill east of the railroad will require about 300,000 cubic yards of material, and those west, about 160,000 cubic yards. All changes in sewer and water pipe lines and roads, as well as new installations, will be made by the forces of the Fifth Division.

Footwalk on Gamboa Bridge

Plans are in preparation for building a footwalk the length of Gamboa bridge over the Chagres River, for use after Gatun Lake has risen. The walk will be outside the trusses and girders, and will be of sufficient width and strength to accommodate the passage of native horses.

Concrete Work in Locks and Spillways.

Over 99 per cent of the entire quantity of concrete to be placed in the locks had been laid at the close of work on May 17, the amount in place being 4,454,199 cubic yards.

A statement of the concrete laid in the six locks of the Canal, and in Gatun and Miraflores spillways, as of May 17, follows.

GATUN LOCKS.		Concrete laid.
May 12.....		470
May 13.....		364
May 14.....		666
May 15.....		312
May 16.....		428
May 17.....		732
Total.....	2,972	
Previously reported.....	2,028,915	
Grand total.....	2,031,887	
PEDRO MIGUEL LOCK.		
May 12.....		44
May 13.....		111
May 14.....		78
May 15.....		72
May 16.....		26
May 17.....		51
Total.....	382	
Previously reported.....	920,453	
Grand total.....	920,835	
MIRAFLORES LOCKS.		
May 11.....		128
May 12.....		426
May 13.....		176
May 14.....		213
May 15.....		70
May 16.....		264
May 17.....		195
Total.....	1,472	
Previously reported.....	1,500,005	
Grand total.....	1,501,477	
GATUN SPILLWAY.		
May 12.....		72
May 13.....		62
May 14.....		76
May 15.....		54
May 16.....		37
May 17.....		84
Total.....	381	
Previously reported.....	225,755	
Grand total.....	*226,140	

*The figures for Gatun spillway include the concrete placed in the hydroelectric station, 235,000 cubic

yards being the estimated amount required for both Gatun spillway and station.

MIRAFLORES SPILLWAY.

May 12.....	482
May 13.....	494
May 14.....	652
May 15.....	733
May 16.....	625
May 17.....	572
Total.....	3,558
Previously reported.....	29,334
Grand total.....	32,892

Dynamiting of Dike.

The east end of the dike separating the ocean channel from the only section at the Pacific end of the Canal remaining to be dredged was destroyed by dynamite at 10.35 a. m., Sunday, May 18. At this time the water in the pit, north of the dike was a little lower than the tide level in the open water channel. The blast, which was one of the largest ever shot off in connection with the Canal work, consisted of 32,750 pounds of 60 per cent dynamite, planted in 120 holes, some of them drilled to a depth of 70 feet. The explosion caused the ground to vibrate for several miles around, but on account of the depth at which the holes were loaded, the noise was muffled. The blast leveled the end of the dike, and loosened the piles in the trestle foundation, but did not establish an opening between the channel and pit. The dredge *Corozal* was set at work on Monday morning, May 19, removing the remainder of the dike.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending May 17:

DATE.	Hours worked.	Cubic yards.
May 12.....	5 00	1,430
May 13.....	8 40	1,288
May 14.....	7 05	1,841
May 15.....	6 05	1,914
May 16.....		
May 17.....		
Total.....	26 50	6,473

Work Resumed on Masonic Temple at Colon.

Work on the new Masonic Temple in Colon which was suspended last July owing to lack of funds, will be resumed at once, a loan, payable in five years, having been negotiated with the Panama Railroad Company. The new building, which is situated on the corner of Bolivar and Eleventh Streets, directly behind the commissary, is a two-story, fireproof concrete structure. Special features will be a modern café, equipped with electric cooking apparatus, and a roof garden. Electric lights and telephone service will be installed throughout the building.

Capacity of Flatboats Carrying Employees.

Following the drowning of four West Indian employes by the swamping of a flatboat which was being towed along the French canal, near the dry dock at Mount Hope, on April 23, the Board of Local Inspectors considered, at the instance of the Sanitary Department, rating the maximum capacity of all flats and skiffs in use by the Commission. The Board reported adversely upon the idea, stating that, "as a rule such plant is operated under the observation of intelligent employes, accustomed to water work, and its capacity varies with the conditions varying at any given time, and is hardly a fixed quantity.

No effort has ever been made in the United States, as far as known, to fix the capacity of such craft not used for hire."

Missing Men.

Any one having information regarding the whereabouts of James Guillian, or Quilliam, who is supposed to be on the Isthmus, is requested to communicate with the American Legation, Panama.

Any one having information regarding the whereabouts of Richard Renton Perot, who left the service of the Commission in March, 1907, or of William Lange, who is supposed to be on the Isthmus, is requested to communicate with THE CANAL RECORD, Ancon.

Red Cross Finances.

A statement of the finances of the Canal Zone Chapter, American National Red Cross, for the month of March, follows:

RECEIPTS.		
March 1, On hand.....	\$2,633.93	
5, Misc. receipts account		
Jamaican relief fund.....	12.50	
6, From sale of Christmas seals.....	1.00	
7, Interest on funds in bank in December, January and February.....	10.37	
31, Membership dues during month.....	7.00	
	\$2,664.80	
DISBURSEMENTS.		
March 1, Relief of destitute family at Panama.....	\$ 189.50	
3, Money advanced to destitute family at Panama—to be returned....	100.00	
6, To National Red Cross, Washington, D. C., for one-half membership dues.....	66.00	
6, To National Red Cross Washington, D. C., 10 per cent. of receipts for Christmas seals....	81.27	
6, Relief of Spaniard deported from Colon Hospital.....	30.00	
14, Relief of exemployee deported to his home in Greece.....	25.00	
22, Relief of English woman at Colon.....	50.00	
27, Postage for use of secretary.....	2.00	
27, Printing letterheads....	3.64	
31, Relief of destitute American, Ancon.....	2.00	
	549.41	
March 31, Balance on hand.....	\$2,115.39	
Approved: JOHN L. PHILLIPS, Treasurer.		
EDW. SCHILDHAUER, Chairman.		

Revenue Collections for April.

Collections other than postal collections during the month of April, 1913, were, as follows:

Bicycle, chauffeur and navigator licenses...	\$ 59.00
Motor vehicle licenses.....	188.00
Steamboat inspection.....	629.10
Insurance collections.....	146.27
Taxes, licenses, etc., (deputy collectors of revenues).....	4,760.94
Total.....	\$5,783.31
NONREVENUES.	
Cash received from estates.....	\$2,725.87
Value of estates closed.....	3,563.72

Mr. J. J. Henriquez has been appointed vice-consul of Belgium in the Republic of Panama, with residence at Colon.

Because of increased railway building, the Quartermaster's Department's recent requisition for 22,000 cross-ties, No. 1 grade, has been increased by cable order to 40,000.

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

The Empire Woman's Club has taken a recess until October 9, when it will reconvene. There was no election of officers at the meeting on Tuesday, May 6, the present administration remaining over until the beginning of the club year in October.

To close the year 1912-1913, the Gatun Woman's Club held an open meeting at the Commission clubhouse on Thursday, May 8, which was attended by the members of the club and many invited guests. The meeting was held in the entertainment hall of the clubhouse which was decorated with red hibiscus, and a variety of cut flowers. From 3 to 4 o'clock there was a program during which the following numbers were given: Address of welcome by Mrs. J. H. Stevenson, chairman of the committee on arrangements for the meeting; piano solo, Mrs. Dennis; address, Miss J. Macklin Beattie; vocal solo, Mrs. Charles Purdy; and a piano solo by Miss Florence Neville. Following the program, an informal reception was held, refreshments being served by the officers of the club. The president has called a business meeting of the club for Friday, May 23, at which time it will be decided whether to disband or to hold over, reopening after a short recess. In accordance with the request of the club, a brief review of the organization follows:

The Gatun Woman's Club was organized on October 17, 1907, with 17 members. Mrs. Chester Harding was the president. The first work of the club was to procure quarters for the unmarried school teacher who was assigned to the school before quarters were constructed for the bachelor women. During the year 1907-1908 the club passed through several trying stages. It emerged, however, with a good record, and though the average membership has never been more than the original 17, the organization won for itself a prominent place in the social life of the village. In 1909, the club opened a kindergarten, providing the equipment and maintaining a teacher through one year. The following year, aided by the community, the club opened the first public playground for the American children. Although, eventually, the playground movement became a community affair, the money for its establishment—\$400—being raised by a two-days' carnival, in which the residents of the village participated, the idea was popularized through the woman's club, and the credit of the initiatory steps toward the establishment of this civic improvement properly belongs to these women. Other efforts of the club have been along philanthropic lines, such as Christmas celebrations and gifts for the children in New Gatun and the Spanish quarters, visiting the sick and sewing for children whose mothers were unable to work for them, home economics, exchanges of recipes and useful household suggestions, demonstration in cooking and instruction in needlework, literature, programs on current topics and papers of interest from readers invited to entertain, exhibits of pictures, and of needlework and pottery. Music has always formed an attractive feature of the home programs, and on one occasion, when the club was hostess to the State Federation, the program was given entirely by members of the club or residents of the village. Throughout the six years of

the existence of the club, it has been one of the foremost of the organizations to support the efforts of the State Federation, in many cases paying double its apportionment toward philanthropic movements begun by the State Federation. "Club teas" have been interesting features of club life. The presidents during the six years have been: Mrs. Chester Harding, 1907-1908; Mrs. C. D. Corp, 1908-1909; Mrs. Charles Stoddard, 1909-1911; Mrs. J. H. Stevenson, 1911-1912; Mrs. Edward Neville, 1912-1913.

Church Notes.

The Fidelity Bible Class of Empire celebrated Mother's Day with a social meeting on Tuesday, May 13, when the following program was given: Devotional exercise, led by members of the class; reading, "A day in the life of a Japanese mother," Mrs. Edward Stanton; recitation by Sarah Smith; violin solo, Miss Juanita Pierson, accompanied by Mrs. M. E. Smith; reading from Panama Patchwork, Miss Phyllis Kelly; piano solo, Miss Lucille Butler; vocal solo, Miss Myrtle Byram, accompanied by her sister, Miss May Byram; reading, "Mary of Bethany," by Mrs. H. A. A. Smith. The program was arranged by Mrs. Frank Peak. Refreshments were served.

At the meeting of the Woman's Altar Guild of St. Luke's Hospital chapel, Ancon, held at the home of Mrs. Charles F. Mason on Tuesday morning, May 20, it was decided to omit the meeting on the first Tuesday in June and to convene in a social session at the residence of Mrs. Frank Feuille on Tuesday, June 24, at 3.30 o'clock.

High School Commencement.

The commencement exercises of the class of 1913, at the Canal Zone High School will be held in the Commission clubhouse at Gatun on Friday evening, June 27. There are seven graduates, three boys, and four girls. Following the exercises, the underclass students will hold an informal reception for the seniors. The junior class will act as ushers for the graduates. The commencement will resemble class day exercises, each graduate taking part in the program, which will be, as follows:

Overture.....	Orchestra
Song, "Greetings," by Franz Abt.....	High School Chorus
Salutatory.....	Corrine Browning
Piano solo.....	Arthur Howard
Class poem.....	Helen Calkins
Song, "Ship of State," words by Longfellow.....	High School Chorus
Debate.....	Frederick Barber and Emmanuel Perry
Selection.....	Orchestra
Contralto solo.....	Adeline Babbitt
Valedictory.....	Emma Stubner
Selection from "Il Trovatore" by Verdi.....	High School Chorus
Presentation of diplomas.....	Frank A. Gause
Selection.....	Orchestra

The high school is preparing for its annual entertainment to be given in June. Goldsmith's comedy, "She stoops to conquer" will be played. The first performance will be given at the National Theatre in Panama, on Saturday, June 7, and the play will be repeated at several of the Commission clubhouses. The proceeds from these entertainments will be used to pay the deficit on the midyear issue of *The Zonian*, the high school magazine, and for general expenses incidental to the entertainment. Entertainments given by the high school in former years were, as follows: "Pauline," an

operetta, in 1910; "Mr. Bob," a comedy, in 1911; "The Merry Milkmaids," an operetta, in 1912.

Receipts from Charity Ball.

One thousand and fifty-three dollars are the total receipts of the ball held at the Hotel Washington, Colon, in April, for the benefit of the new St. Vincent's orphanage, recently opened by the Sisters of Charity in that city. The Sisters have taken up residence in the new building and the school has been removed from its former site on Bottle Alley to the rooms on the ground floor of the orphanage.

Memorial Day Observance.

On Sunday, May 25, there will be a special service at St. Luke's Hospital chapel, Ancon, to be followed by decoration of the graves at Ancon cemetery, where a memorial service will be read, three volleys fired, and taps blown.

Services will be held at Mount Hope cemetery on Decoration Day, May 30. As soon as possible after the arrival of the morning train from Panama, the organizations will form a parade on Roosevelt avenue, Cristobal, and proceed to the cemetery. The bands of the Tenth Infantry and United States Marine Corps will lead; the veteran service organizations will come next, followed by the various societies.

The committee on arrangements extends an invitation to all fraternal societies to participate. Mr. C. L. Bleakley, Cristobal, is secretary of the committee, and may be communicated with in connection with arrangements concerning the parade.

PERSONAL.

A farewell banquet was given to Mr. J. A. Smith, the retiring general superintendent of the Panama railroad, by the steamship agents in Colon, at the Hotel Washington, on Saturday evening, May 17. Mr. John D. Patterson, the new general superintendent of the railroad, was among the guests.

Dr. Matthew J. Hoey has been appointed quarantine officer at Panama, effective May 19.

Obituary.

The death of Robert Forest Craig, a time inspector in the Department of Examination of Accounts, residing at Empire, occurred at the nursing hostel at Kingston, Jamaica, on Sunday, May 4. He had arrived in that city only two days previously with the intention of spending his leave of absence on the island. He was born in Crockett County, Tenn., about 47 years ago, was unmarried, and first entered the service of the Canal Commission on August 13, 1904. He is survived by his brother, John L. Craig, living at Friendship, Tenn. The burial took place at Kingston on Monday, May 5.

The petition of 17 of the 35 holders of saloon licenses in the Canal Zone for an extension of their licenses for a period of two months after July 1, has been denied.

James Gordon, Jamaican, check No. 3185, a laborer in the employ of the McClintic-Marshall Construction Company, fell from the wall of the east chamber at Gatun Locks on Tuesday, May 13, and was killed.

CANAL WORK IN APRIL.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., May 17, 1913.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of April, 1913:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the construction divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	2d. Div.	5th Div.	6th Div.	Total.
Work excavation, dry	Cubic yards	29,649	1,178,000	6,125	3,225	356,942	1,674,900
Work excavation, wet	Cubic yards	440,028		182,125			979,053
Total work excavation	Cubic yards..	469,677	1,178,000	250,421	3,225	356,942	2,653,995
Plant excavation, dry	Cubic yards		1,100				1,100
Plant excavation, wet	Cubic yards						
Total plant excavation	Cubic yards..		1,100				1,100
Total Canal excavation	Cubic yards..	469,677	1,179,100	250,421	3,225	356,942	2,655,095
Material placed in dams	Cubic yards..	106,862			16,250		123,072
Concrete placed, locks, dams and spillways	Cubic yards..	24,000			2,625		45,850
Explosives used	Tons (Gross)	42.55	113.39	10.03	74.57	23.60	269.14
Rock drilled	Feet	15,262	317,681	15,440	107,555	18,109	474,047
Tracks removed	Miles		8.99	1.23	1.51		11.73
New tracks laid	Miles	2.03	21.52	3.38	1.51		28.44
Rock crushed	Cubic yards				50,092		50,092
Cement used	Barrels	28,102	232	4,487	20,604	12	53,471
New roads built	Miles				0.71		.71
Water mains laid	Feet	3,000			6,050		9,050
Sewers laid	Feet	48			1,306		1,354
Open drains and ditches dug	Feet	18,700		8,012	1,787		28,499
Average daily force		4,855	6,876	1,569	6,143	1,238	20,482
Average rainfall	Inches	4.03	1.62	0.06	1.04	0.06	1.83

*Accomplished by 6th division for the 2nd division.

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the division engineer of the Atlantic Division, the resident engineer of the Fifth Division, and the erection subdivision of this office. The inspection of this work is being cared for by the masonry and lock structures subdivision. This subdivision is also charged with general inspection of masonry work of all the locks.

INSPECTION OF INSTALLATION OF RISING STEM GATE VALVES, ERECTION OF SPILLWAY GATES AND CAISSONS, AND ASSEMBLY OF HYDRO-ELECTRIC DRAFT TUBES AT GATUN.

Inspection of the erection work on the eight spillway gates at Miraflores was continued and this work was completed during the month.

Work was commenced on the spillway caisson for Miraflores, about 80 per cent of which was accomplished during the month.

Work on the preparation of rising stem gate valve machinery chambers was continued; at the close of the month this work was about 98 per cent completed at Gatun, 92 per cent completed at Pedro Miguel, and 60 per cent completed at Miraflores.

Inspection of the assembly and riveting of draft tubes for the Gatun hydroelectric station was continued.

LOCK GATES AND PROTECTIVE DEVICES.

All the material for the 92 leaves has been completed and shipped, except the nickel steel bearing plates for four leaves. Shipments

of spare parts during the month totaled 211 tons. The progress in erection, reaming, and riveting was greater than in any preceding month. The status of the work in the several locks may be summarized, as follows:

Gatun—Work in progress on all the leaves, 40 in number; erection 95 per cent completed; reaming 96 per cent completed; riveting 90 per cent completed; finishing 25 per cent completed.

Pedro Miguel—Work was in progress on the entire 24 leaves: erection 95 per cent completed; reaming 96.5 per cent completed; riveting 88.5 per cent completed; finishing 10 per cent completed.

GUARD VALVES.			
	Gatun—6		Pedro Miguel—6
	Assembled.	Placed	Assembled. Placed.
During mo.			
To date	6	6	

Miraflores—6.			
	Assembled.		Placed
During month			
To date			

FIXED IRONS AND TRACKS, RISING STEM AND GUARD VALVES.

	Gatun—124		Pedro Miguel—60
	Milled or Ground.		Milled or Ground.
During mo.			
To date	124		48

Miraflores—84			
	Milled or Ground.		
During month			18
To date			54

RISING STEM GATE VALVE MACHINES (MECHANICAL)

	Gatun—56.		
	Received.	Partially installed.	Installed.
During month			
To date	56	11	2

	Pedro Miguel—24		
	Received.	Partially installed.	Installed.
During month			
To date	24		22

	Miraflores—36.		
	Received.	Partially installed.	Installed.
During month			
To date	35	14	4

RISING STEM GATE VALVE MACHINES (ELECTRICAL).

	Gatun—56		Pedro Miguel—24	
	During mo.	To date	During month	To date
Motor connected	14	18		
Limit switch:				
Installed	2	45		22
Connected	23	38		
Indicator transmitter:				
Installed				
Connected				
Contactor panel:				
Installed	12	42	2	2
Connected				
Elect. work started		50		22
Work completed				

	Miraflores—36	
	During month	To date
Motor connected		
Limit switch:		
Installed		4
Connected		4
Indicator transmitter:		
Installed		
Connected		
Electric work started	10	10
Work completed		

RACK TRACK.

In one-foot units (Mechanical).

	Gatun—21,945 feet.			
	Dist.	Track laid.	Frozen.	Completed.
During month	0	130	984	765
To date	19,768	19,768	17,524	17,032

	Pedro Miguel—13,213 feet.			
	Dist.	Track laid.	Frozen.	Completed.
During month	305	305	156	0
To date	10,892	10,892	9,506	8,750

Miraflores—Work was in progress on all of the 28 leaves: erection 78.5 per cent completed; reaming 70.5 per cent completed; riveting 49 per cent completed.

LOCK GATE RECESS COVERS.

All recess covers are now erected and riveted, except the movable parts at the ends of some of the recesses.

CHAIN FENDERS.

Tests on the first chain fender, No. 812-813, were continued and consisted in exerting a heavy pull on the end of the chain in pit No. 813 by means of a Lidgetwood unloader and a double set of triple blocks and falls. These tests were made especially to ascertain whether the resistance valves will function properly in service and, so far as they went, the tests indicate that this result will be accomplished. The tests will be continued.

ERECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

Installation of the machines keeps pace with the receipt of the various parts, but delay in the receipt of certain parts results in a great many machines being only partially completed. The following tabulations summarize this work:

RISING STEM GATE VALVES.

	Gatun—56		Pedro Miguel—24	
	Assembled.	Placed.	Assembled.	Placed.
During mo.	4	4		
To date	50	50	22	22

	Miraflores—36	
	Assembled.	Placed.
During month		
To date	4	10
	22	12

Miraflones—19,031 feet.				
	Dist.	Track laid	Frozen	Completed.
During month...	1,868	2,415	1,015	853
To date.....	8,250	7,910	1,557	1,193

RACK TRACK.
In one-foot units (Electrical).

Gatun.		Pedro Miguel.	
Steel Bar	Copper bar	Steel bar	Copper bar
During month...	810	950	660
To date.....	12,156	15,972	6,662
		Miraflones.	
		Steel Bar	Copper Bar
During month...			690
To date.....		5,240	690

CYLINDRICAL VALVE MACHINES (MECHANICAL).

Gatun—60.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	60		59

Pedro Miguel—20.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	20		20

Miraflones—40.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	40	10	30

CYLINDRICAL VALVE MACHINES (ELECTRICAL).

Gatun—60		Pedro Miguel—20	
During month	To date	During month	To date.

Motor connected.....	59		
Limit switch:			
Installed.....	55		20
Connected.....	16	30	10
Indicator switch:			
Installed.....	54	10	10
Connected.....	16	30	
Contact panel:			
Installed.....	60		20
Connected.....	10	2	
Electrical work:			
Started.....	60		20
Completed.....			

Miraflones—40			
	During month	To date	

Motor connected.....			
Limit switch:			
Installed.....		10	30
Connected.....			
Indicator switch:			
Installed.....		20	20
Connected.....			
Contact panel:			
Installed.....			9
Connected.....			
Electrical work:			
Started.....		20	40
Completed.....			

MITER GATE MOVING MACHINES (MECHANICAL).

Gatun—40.			
	Received	Partially installed.	Installed.
During month.....	14	3	2
To date.....	40	32	5

Pedro Miguel—24.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	24	22	2

Miraflones—28			
	Received	Partially installed.	Installed.
During month.....	10	6	
To date.....	18	24	

MITER GATE MOVING MACHINES (ELECTRICAL).

Gatun—40		Pedro Miguel—24	
During month	To date	During month	To date
Motor connected.....			2
Limit switch:			
Installed.....	10	29	9
Connected.....	5	5	
Commuting switch:			
Installed.....	10	29	
Connected.....	5	5	
Indicator transmitter:			
Installed.....		1	
Connected.....			
Aux. cut-out switch:			
Installed.....	1	1	
Connected.....			
Contact panel:			
Installed.....	5	26	6
Connected.....			14
Electrical work:			
Started.....	9	30	1
Completed.....			20

Miraflones—28	
During month	To date
Motor connected.....	
Limit switch:	
Installed.....	
Connected.....	
Commuting switch:	
Installed.....	
Connected.....	
Indicator transmitter:	
Installed.....	
Connected.....	
Auxiliary cut-out switch:	
Installed.....	
Connected.....	
Contact panel:	
Installed.....	
Connected.....	
Electrical work:	
Started.....	
Completed.....	

AUXILIARY CULVERT VALVE MACHINES. (MECHANICAL).

Gatun—4.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	4		4

Pedro Miguel—4.			
	Received.	Partially installed.	Installed.
During month.....			0
To date.....	4		4

Miraflones—4.			
	Received.	Partially installed.	Installed.
During month.....			1
To date.....	4	3	1

AUXILIARY CULVERT VALVE MACHINES (ELECTRICAL).

Gatun—4		Pedro Miguel—4	
During month	To date	During month	To date
Motor connected.....	2		
Limit switch:			
Installed.....	4		4
Connected.....	2		4
Indicator switch:			
Installed.....	4	4	4
Connected.....	2		
Contact panel:			
Installed.....	4		4
Connected.....			
Electrical work:			
Started.....	4		4
Completed.....			

Miraflones—4		
	During month	To date
Motor connected.....		
Limit switch:		
Installed.....	1	2
Connected.....		
Indicator switch:		
Installed.....	3	3
Connected.....		
Contact panel:		
Installed.....	4	4
Connected.....		
Electrical work:		
Started.....	1	1
Completed.....		

MITER FORCING MACHINES (MECHANICAL).

Gatun—20.			
	Received.	Partially installed.	Installed.
During month.....	5		
To date.....	6		1

Pedro Miguel—12.			
	Received.	Partially installed.	Installed.
During month.....	3		
To date.....	3		

Miraflones—14.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

MITER FORCING MACHINES (ELECTRICAL).

Gatun—20		Pedro Miguel 12	
During month	To date	During month	To date
Motor connected.....			
Limit switch:			
Installed.....	1		
Connected.....			
Indicator switch:			
Installed.....			
Connected.....			
Contact panel:			
Installed.....	3	14	7
Connected.....			
Electrical work:			
Started.....	3	14	1
Completed.....			10

Miraflones—14		
	During month	To date

Motor connected.....		
Limit switch:		
Installed.....		
Connected.....		
Indicator switch:		
Installed.....		
Connected.....		
Contact panel:		
Installed.....		
Connected.....		
Electrical work:		
Started.....		
Completed.....		

SPILLWAY GATE MACHINES (MECHANICAL).

Gatun—14.			
	Received.	Partially installed.	Installed.
During month.....		2	0
To date.....	14	6	*1

Miraflones—8.			
	Received.	Partially installed.	Installed.
During month.....	8		
To date.....			

*Except gate seat babbitted.

SPILLWAY GATE MACHINES (ELECTRICAL).

Gatun—14		Miraflones—8	
During month	To date	During month	To date
Motor connected.....			
Limit switch:			
Installed.....	1		

SPILLWAY GATE MACHINES (ELECTRICAL)—*Con.*

Connected.....		
Indicator switch:		
Installed.....	1	
Connected.....		
Contact panel:		
Installed.....		
Connected.....		
Electrical work:		
Started.....	1	
Completed.....		

MITER GATE RECESS COVERS.

Gatun—36.			
	Placed.	Frozen.	Completed.
During month.....		3	3
To date.....	36	34	33
Pedro Miguel—20.			
	Placed.	Frozen.	Completed.
During month.....			
To date.....	20	20	
Mirafleres—24.			
	Placed.	Frozen.	Completed.
During month.....	2	2	
To date.....	22	4	

CHAIN FENDER MACHINES (MECHANICAL).

Gatun—16			
	Received.	Partially installed.	Installed.
During month.....		1	
To date.....	0	*13	
Pedro Miguel—16			
	Received	Partially Installed.	Installed.
During month.....			
To date.....		*16	
Mirafleres—16			
	Received	Partially Installed.	Installed.
During month.....		*2	
To date.....		*8	

*Covers only hawsepipe and miscellaneous steel work for fenders. Only one received to date.

CHAIN FENDER MACHINES (ELECTRICAL).

Gatun—16		Pedro Miguel—16	
Dur-	To	Dur-	To
ing	date	ing	date
month		month	
Motor connected.....			
Limit switch:			
Installed.....	2		
Connected.....			
Local ind. erected and connected.....			
Indicator transmitter:			
Installed.....	2		
Connected.....			
Valve controller attached and connected.....			
Contact panel:			
Installed.....	2		
Connected.....			
Electrical work:			
Started.....	2		
Completed.....			
Mirafleres—16			
Dur-	To	Dur-	To
ing	date	ing	date
month		month	
Motor connected.....			
Limit switch:			
Installed.....		2	
Connected.....			
Local ind. erected and connected.....			
Indicator transmitter:			
Installed.....			
Connected.....			
Valve controller attached and connected.....			
Contact panel:			
Installed.....			
Connected.....			
Electrical work:			
Started.....			
Completed.....			

HANDRAIL OPERATING MECHANISMS (MECHANICAL).

Gatun—36			
	Received.	Partially Installed.	Installed.
During month.....			
To date.....	36		11
Pedro Miguel—20			
	Received.	Partially Installed.	Installed.
During month.....			
To date.....	20		
Mirafleres—24			
	Received.	Partially Installed.	Installed.
During month.....			
To date.....	24		

HANDRAIL OPERATING MECHANISMS (ELECTRICAL).

Gatun—36		Pedro Miguel—20	
Dur-	To	Dur-	To
ing	date	ing	date
month		month	
Motor connected.....			
Limit switch con.....			
Handrail controller:			
Installed.....	1	21	
Connected.....			
Contact panel:			
Installed.....	6	27	6
Connected.....			14
Electrical work:			
Started.....	6	27	1
Completed.....			20
Mirafleres—24.			
Dur-	To	Dur-	To
ing	date	ing	date
month		month	

Motor connected.....			
Limit switch connected.....			
Handrail controller:			
Installed.....			
Connected.....			
Contact panel:			
Installed.....			
Connected.....			
Electrical work:			
Started.....			
Finished.....			

MITER GATE SUMP PUMPS (MECHANICAL).

Gatun—40.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	40	8	
Pedro Miguel—24.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	24	4	

Mirafleres—28.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	28		

CHAIN FENDER SUMP PUMPS (MECHANICAL).

Gatun—16.			
	Received.	Partially installed.	Installed.
During month.....		2	
To date.....	16	2	
Pedro Miguel—16.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	16		
Mirafleres—16.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	16		

TRANSFORMER ROOMS.

Gatun—16		Pedro Miguel—8	
Dur-	To	Dur-	To
ing	date	ing	date
month		month	
Installed:			
Power trans.....	3	4	
Light trans.....	4	4	
Oil switch bank.....	4	4	
Low tens. swbd.....	3	3	
Bus bars installed and connected.....	3	3	
Bells installed and connected:			
Low tension.....			
High tension.....			
Electrical work:			
Started.....	4	5	
Completed.....			

Mirafleres—14			
Dur-	To	Dur-	To
ing	date	ing	date
month		month	
Installed:			
Power transformers.....			
Light transformers.....			
Oil switch bank.....			
Low tension switchboard.....			
Bus bars installed and connected.....			
Bells installed and connected:			
Low tension.....			
High tension.....			
Electrical work:			
Started.....			
Completed.....			

HYDROELECTRIC PLANT.

The erection of the penstocks is about 95 per cent completed; all turbines have been set and the erection of the turbogenerators is approximately 45 per cent completed.

ELECTRICAL WORK—ATLANTIC LOCKS.

During the month, 2,719 feet of cable were pulled into the conduit system, the total amount pulled to May 1, being 303,860 feet.

ELECTRICAL WORK—PACIFIC LOCKS.

During the month 45,300 feet of cable were pulled into the conduit system, the total amount pulled to May 1, being 94,287 feet.

TESTS.

Tests in connection with the first towing locomotive were continued at Gatun. Tests were also continued at this point in connection with the raising and lowering of a spillway gate. At Pedro Miguel, tests were conducted in connection with the rising stem gate valve machines.

EMERGENCY DAMS.

Inspection was in progress in four localities in the United States, and 571 tons of material were accepted. At the end of the month, 14,143 tons had been fabricated and accepted. There were approximately 198 tons of material delivered on the Isthmus during the month: 1,180 tons were erected. On April 30, a total of 8,840 tons had been delivered and 6,382 tons erected. Work was in progress on the east and west dams at Gatun and the east and west dams at Pedro Miguel.

AIDS TO NAVIGATION.

There was one tower of the Atlantic and Pacific type completed, except that stair railing must be erected and permanent lights installed. Three concrete steel reference targets twenty feet high were completely erected. Work was in progress finishing range tower No. 12, Pacific side, erecting four range targets, setting fourth order range lens in tower No. 6, Atlantic Division, placing four gas buoys at the Pacific entrance to the Canal, and making necessary surveys and reconnaissances in Gatun Lake in connection with the construction of range towers, reference targets, and beacons.

Second Division—Office of the Chief Engineer. BALBOA TERMINALS.

The following work was accomplished during the month:

EXCAVATION.	Cu. Yds.
Preparing site.....	17,614
Drydock No. 1.....	30,783
Shop foundations.....	6,087
Shop tunnel.....	9,487
Quay wall.....	3,057
Pier No. 1.....	1,268

Total..... 68,296

FILLING AND EMBANKMENT.

	Cu. Yds.
Preparing site.....	37,263
Backfill—shop foundations.....	2,960
Dikes.....	5,160
P. R. R. coal pockets.....	280
Sixth Division drainage ditch.....	4,960
Atlantic Division.....	15,950
Fifth Division.....	1,780

Total..... 68,353

CONCRETE PLACED.

	Cu. Yds.
Caissons.....	1,577.8
Drainage ditch.....	159.5
Caissons.....	1,011.5
Shop tunnel.....	185.0
Shop foundations.....	1,894.9

Total..... 4,828.7

There were 455,696 pounds of steel reinforcing placed, 15,440 linear feet of rock drilled, 22,475 pounds of dynamite used, and 23,450 linear feet of piling driven.

METEOROLOGY AND HYDROGRAPHY.

The usual observations and measurements were made and taken.

Fifth Division—Office of the Chief Engineer

DISTRICT NO. 1, LOCKS, DAMS, AND DRY EXCAVATION.

Excavation—The total excavation amounted to 398,955 cubic yards, of which 250,068 cubic yards were classified as rock and 148,887 cubic yards as earth.

Filling and embankment—The backfill at Pedro Miguel was increased by 57,165 cubic yards, the total quantity in place at the close of the month being 962,801 cubic yards. At Miraflores, the dry filling in the toes of the west dam was increased by 16,215 cubic yards, making the total quantities of dry and hydraulic filling in place at the close of the month 1,635,629 cubic yards, and 661,048 cubic yards, respectively. The backfill at Miraflores was increased by 116,654 cubic yards, the total quantity in place on April 30 being 1,472,201 cubic yards.

Pedro Miguel Lock—Concrete work consisted of the construction of the south guide wall extension and concrete base for guide wall buffer, lamp post bases, and miscellaneous finishing work. Installation of buffer springs and castings in the guide walls was continued during the month. The total amount of concrete laid was 1,645 cubic yards, placed, as follows: One thousand five hundred and ninety cubic yards in the walls, 30 cubic yards around ducts in area A, three cubic yards around ducts in area B, and 22 cubic yards around ducts in area C.

OPERATION OF THE AUXILIARY CONCRETE CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours).....	8 00
Average number of hours per day worked laying concrete, actual working time.....	6 49
Average number of mixers per day.....	.96
Average hourly output per mixer, actual working time (cubic yards).....	9 63
Concrete laid (cubic yards).....	1,561.00

Eighty-four cubic yards of concrete were mixed and placed by hand. Plant consisted of one 1-yard concrete mixer, output being placed by Decauville equipment, or mixer, discharged directly into forms.

Miraflores Locks—Concrete work for the locks was confined to the southeast and southwest wing walls and to miscellaneous finishing and operating tunnel work. Fixed irons,

aggregating 550,175 pounds, were placed in the lock masonry. The total amount of concrete laid was 12,149 cubic yards, placed, as follows: Eleven thousand, one hundred and six cubic yards in the walls, 838 cubic yards placed for the First Division, 120 cubic yards around ducts in area A, 20 cubic yards around ducts in area B, and 65 cubic yards around ducts in area C.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant	Auxiliary Plant
Length of working day (hours).....	8 00	8 00
Average number of hours per day worked laying concrete, actual working time.....	2 39	6 05
Average number of mixers per day.....	8 00	2 23
Average hourly output per mixer, actual working time (cubic yards).....	39 37	13 18
Average amount of concrete laid per hour per berm or chamber crane, actual working time (cubic yards).....	62 54	
Total concrete laid (cubic yards).....	10,007.00	8,548.00

The above totals include 105 cubic yards in connection with drainage plant, and 17 cubic yards for the United States Steel Products Company. Four berm cranes were operated. Chamber cranes on placing averaged 1.23 units per day. Locomotive cranes and derricks, placing, averaged 1.46 units daily.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

Reservoirs, water mains, sewers and oil pipe lines were maintained and extended as required to facilitate construction work.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER.

Length of working day (hours).....	8 00
Average number of hours per day, actual working time.....	6 39
Average number of cubic yards crushed per hour per working day.....	236 10
Average number of cubic yards crushed per working hour.....	332 60
Total output for the month (cubic yards).....	50,100.00

Sixth Division—Office of the Chief Engineer.

The following is a statement of the output of the seven dredges which were in operation during the month:

DREDGE.	Type.	WORK.			PLANT.		Total.	Remarks.
		Earth. Cu. Yds.	Clay. Cu. Yds.	Rock. Cu. Yds.	Earth. Cu. Yds.	Rock. Cu. Yds.		
Badger.....	Ladder.....	31,676	8,909	8,909			49,91	Place measurement
Cardenas.....	Dipper.....		328	10,222			10,550	Place measurement
Corozal.....	Ladder.....	15,719	48,022	44,662			108,403	Place measurement
Culebra.....	Suction.....	160,352					160,352	Scow measurement
Marmot.....	Ladder.....		11,545	4,626			16,174	Place measurement
Mole.....	Ladder.....	2,169	5,600	4,200			11,999	Scow measurement
No. 85.....	Suction.....				182,125		182,125	Place measurement
Total.....		209,916	74,477	72,619	182,125		539,067	

CHAMÉ SAND EXCAVATION.

Approximately 28,000 cubic yards of sand were excavated at Punta Chamé and delivered to the Balboa sand bins.

BALBOA SHOPS.

The manufacturing and repair work in the shops and shipways was satisfactorily performed during the month.

Atlantic Division.

The timekeeping for the Atlantic Division was transferred to the Examiner of Accounts on April 1.

GATUN LOCKS.

Excavation—Out of a total of 29,282 cubic yards of rock and earth excavated during the month, 2,333 cubic yards of earth were dug from the lock site in preparation of foundations of the north approach walls, and the remainder was taken from the Canal prism.

Backfill—There were 33,168 cubic yards of backfilling placed during the month. Due to

slides which were not anticipated, it has been necessary to increase the original estimate for backfill to 2,244,813 cubic yards, on which basis the locks' backfill at the close of the month was 92.84 per cent completed.

Receiving and issuing material—The issues of rock for the month amounted to 20,548 cubic yards. There were 7,640 cubic yards of sand issued. Cement receipts totaled 30,926½ barrels, and the issues amounted to 24,934½ barrels.

Concrete work—A total of 21,358 cubic yards of concrete was laid, distributed, as follows

Upper lock, 574 cubic yards; middle lock, 12 cubic yards; lower lock, 20,772 cubic yards, making a total of 21,358 cubic yards.

On April 30, the locks concrete work was 99 per cent completed.

OPERATION OF CONCRETE CONSTRUCTION PLANT.

Length of working day (hours).....	9.00
Average number of hours per day worked, per strand of cableway, laying concrete, actual working time.....	3.29
Average number of mixers per day.....	2.52
Average hourly output per mixer, actual working time (cubic yards).....	60.6
Average amount of concrete laid per hour, per strand of cableway, actual working time (cubic yards).....	30.05
Concrete laid, (cu. yds.) cableways.....	20,952
Concrete laid (cu. yds.) portable mixers.....	330
Concrete laid (cu. yds.) hand mixers.....	465

Total amount of concrete laid (cu. yds.)..... 21,747.00

GATUN DAM.

Construction during the month increased the total fill, as determined by car measurement, 129,323 cubic yards, making the total amount in place 21,568,077 cubic yards. On May 1, the dam was 98 per cent completed.

Hydraulic fill—There was nothing added to the hydraulic fill, the total in place remaining at 10,124,082 cubic yards.

Dry fill—There were added to the dry fill 106,862 cubic yards of material removed by steamshovels; this was placed on the north and south toes of the dam, east and west of

the spillway, making the total dry fill in place 11,385,362 cubic yards.

GATUN SPILLWAY.

Concrete—A total of 1,358 cubic yards of concrete was laid, making the total in place at the close of the month 222,852 cubic yards. Concrete work for the spillway is 97.3 per cent completed.

HYDROELECTRIC PLANT.

There were 10 cubic yards of rock removed by hand in the preparation of foundations, making a total excavation of 98,090 cubic yards. There were 941 cubic yards of concrete placed, making a total of 2,730 cubic yards.

HARBOR AND CHANNEL SECTION.

Dredging from the Ocean to Gatun Locks—Seven dredges removed 377,739 cubic yards of earth and 58,866 cubic yards of rock from the Canal prism. In addition, dredge No. 86 removed 52,190 cubic yards of coral sand

at Margarita Bay. On April 30, forty feet of water could be carried from zero to zero plus 2,100 feet; 35 feet to mile post 4 plus 2,600 feet; 30 feet to mile post 4 plus 3,600 feet; 20 feet to mile post 6 plus 2,350 feet, and 10 feet to mile post 6 plus 2,800 feet. Exclusive of the barrier at the north end of the locks and the silt in the channel, there remained to be excavated on May 1st, 852,979 cubic yards of material. The Terrier drilled 3,522 feet, used 22,250 pounds of powder, and shot 3,719 cubic yards of earth and 20,898 cubic yards of rock to minus 45 feet mean sealevel.

WEST BREAKWATER—COLON.

There were 19,515 cubic yards of Porto Bello rock placed upon the breakwater, of which 12,247 cubic yards were handled by cranes and 6,268 cubic yards by the derrick barges, making the total amount placed upon the breakwater to May 1st, 209,442 cubic yards.

MUNICIPAL ENGINEERING.

The work of constructing a tunnel between Brazos Brook reservoir and Gatun Lake was practically completed.

New Colon waterworks—Construction work was continued, although there was considerable delay due to the nonreceipt of pipe on order in the United States.

Central Division.

The total amount of material excavated during the month was 1,179,100 cubic yards, of which 353,646 cubic yards were classified as earth and 825,454 cubic yards as rock. The entire amount was removed by steam-shovels, 1,178,000 cubic yards being classified as primary excavation, and 1,100 cubic yards was from ditch for draining Old Culebra dumps. Of the total primary excavation, 517,300 cubic yards were taken from within the lines of the Canal prism, and 660,700 cubic yards from without the Canal prism, the latter amount being excavated from slides and from the high levels as a preventive against slides.

The daily average number of steamshovels at work was 40.90, and the number of shovel days was 1,063½, as compared with 38.52 shovels at work and 963 shovel days in March. For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table is presented:

Period	Excavated by shovels	Classification of material		Av. No. of shovels at work	W. kg. days	Av. yards per shovel day.
		Rock	Earth.			
1912	Cu. Yds.	Cu. Yds.	Cu. Yds.			C. Y.
April 1912	1,622,947	1,087,364	535,583	45.78	25	1,414.30
April 1913	1,790,000	1,174	37,648	40.90	76	1,108.00

Rainfall at Empire 1912, 2.64 ins.; 1913, .90 ins.

The above table shows the average output per shovel to be 21.66 per cent less in April, 1913, than in the corresponding month of 1912.

The estimated amount of dry material removed and to be removed, according to the revision of February 1, 1913, is 111,751,472 cubic yards. Up to May 1st, 105,410,172 cubic yards had been removed, leaving 6,341,300 cubic yards to be removed in order to complete all dry excavation in this division. At the close of the month 94.33 per cent of all dry excavation was completed. On April 30, the status of the work in the two sections

which compose this division was, as follows:

CULEBRA CUT.	
Dry excavation accomplished	Cu. Yds. 93,025,517
Dry excavation to be accomplished	6,341,300
CHAGRES SECTION.	
Dry excavation completed	12,384,655
Wet excavation still to be accomplished	300,000

There were furnished during the month to the Panama Railroad Company, for the Cristobal mole, 1,605 cubic yards of stone, the total amount furnished to April 30 for this purpose being 227,270 cubic yards.

There were 78,677 cubic yards of material dumped from the Naos Island trestle, making a total of 1,362,212 cubic yards.

The daily average number of laborers employed was 6,264, while the average number of gold men working was 612.

Quartermaster's Department.

Labor—The force report for April 23 showed 39,554 men actually working for the Commission and the Panama Railroad Company. The actual working forces of the several contractors totaled 5,107 men. There was no shortage of unskilled labor.

Buildings—The recreation at Corozal of eight buildings moved from Gorgona was completed, and eight others are in process of recreation. Work on the Gamboa engine shed at its new site near Gold Hill was completed. One Type 5 bachelor quarters and one standard laborers' barrack were moved from Gatun to Ancon. One laborers' barrack was also moved from Gorgona to Balboa, where it will be used as an addition to the European laborers' mess. An office and storehouse were moved from Bas Obispo to Corozal.

Quarters—Bachelor quarters at Culebra and Empire are very much congested as a result of moving the car repair work from Gorgona to Empire. Considerable difficulty is being experienced in vacating quarters at Gorgona fast enough to keep ahead of the gangs engaged in moving the buildings.

Material and supplies—The value of the material received was \$1,324,607.32. This material came forward in 38 steamers, the total weight of cargo, exclusive of lumber, piling and cross-ties, being 40,000 tons.

Subsistence Department.

The Hotel Tivoli showed a net profit of \$5,346.04. The operation of the line hotels, European laborers' messes, colored laborers' kitchens, restaurants, tugs, and dredges returned a net profit of \$206.21. The total profit on subsistence operations during the month was \$5,552.25.

Department of Civil Administration.

COURTS.

During the month eight civil and 47 criminal cases were disposed of in the Circuit Courts, and 64 civil and 463 criminal cases in the District Courts.

FIRE PROTECTION.

There were 58 fires reported in the Canal Zone. The total damage occasioned by these fires was \$58.40.

POSTS, CUSTOMS, AND REVENUES.

Money order sales amounted to \$424,108.82, and the fees to \$2,012.54. Receipts from stamp and card sales and newspaper postage aggregated \$9,257.40. The total collection of revenues was \$17,053.25, and the collections on account of court fines, costs, and fees \$2,109.70. A total of \$170,828 was deposited in postal savings accounts, and a

total of \$152,301 was withdrawn. At the port of Ancon, 24 vessels entered and 22 cleared; at the port of Cristobal, 27 entered, and 28 cleared.

POLICE AND PRISONS.

The total number of persons arrested was 483, of whom 426 were men, and 57, women. Twenty-one nations, or 43 separate states and dependencies, were represented. There were 11 convicts committed to the penitentiary and eight were discharged, leaving 120 convicts in confinement at the close of the month. The cost of guarding and subsisting these prisoners was \$2,125.68 and the value of the work performed by them on the roads of the Canal Zone was \$2,147.70.

PUBLIC WORKS.

In the city of Panama the daily average consumption of water was 1,866,033 gallons, and in Colon 1,157,912 gallons. The usual inspection and maintenance work was performed.

SCHOOLS.

The net enrollment in the white schools was 1,350; the average number of pupils belonging was 1,070.4, and the average daily attendance 1,009.6. In the colored schools the net enrollment was 1,523; the average number belonging was 959.2, and the average daily attendance 797.6. At the close of the month there were employed in the white schools 46 teachers, and in the colored schools 32 teachers, the total being one greater than at the close of the preceding month.

Department of Sanitation.

The total number of deaths from all causes among employes was 51, divided, as follows: From disease 24, and from violence 27, giving an annual average per thousand of 4.84 and 5.45, respectively. The annual death rate per thousand among employes for the month of April, 1912, was 11.38.

The annual average death rate per thousand in the Canal Zone, and in the cities of Colon and Panama, including both employes and nonemployes, was 21.18. This rate is based upon a population in the Canal Zone of 62,810 according to the census of February, 1912, and populations in Panama and Colon, respectively, of 47,172 and 20,232, as estimated by the Department of Sanitation. The annual average death rate per thousand among the same classes of population for the month of April, 1912, was 17.21.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was: Whites 2.82; blacks 5.39, giving a general average for disease of 4.84. For the same month during 1911 the annual average death rate per thousand from disease among whites was 2.85; blacks 7.67, giving a general average of 6.42; and for the same month during 1912, whites 3.74; blacks 10.48, giving a general average of 8.77.

Among employes, deaths from the principal diseases were, as follows: Löbar pneumonia, five; organic disease of the heart, three; tuberculosis, seven, leaving nine deaths from all other diseases, and 27 deaths from external violence. No case of yellow fever, smallpox, or plague originated on, or was brought to the Isthmus during the month.

Respectfully,

GEO. W. GOETHALS,
Chairman.

FOURTH OF JULY.

Cristobal Selected as the Place for Holding This Year's Celebration.

Cristobal was selected as the place for holding the 1913 Fourth of July celebration at a meeting of representatives of the various departments and divisions of the Canal Commission; of the employees of the McClintic-Marshall Construction Company; and of the United States Marine Corps at Camp Elliott and Tenth Infantry at Camp Otis, held at the Administration Building, Ancon, on Saturday, May 17.

The preferences of the small percentage of employees that had been canvassed by the representatives present were reported, as follows: In favor of Ancon, 826; Cristobal, 800; Empire, 53; Gatun, 22; with a few expressions in favor of other places. The representatives of the McClintic-Marshall men were in favor of Gatun, while the representatives from Camp Elliott and Camp Otis were in favor of the place that would afford the best facilities for the athletic events. Upon motion, it was decided that the selection be made by a vote of the representatives present, dropping the town with the smallest number of votes in case no place received a majority at first. Three votes were taken, as follows:

First—Cristobal, 13; Ancon, 9; Empire, 6; Gatun, 3.

Second—Cristobal, 11; Empire, 11; Ancon, 9.

Third—Cristobal, 17; Empire, 14.

The appointment of the various committees was left to the chairman of the meeting, Commissioner M. H. Thatcher, who announced that he would make his selections later.

The question of confining the fireworks display to the main celebration at Cristobal, with the exception of Taboga, Palo Seco, and Porto Bello, or of following the plan of last year in which individual displays were held at several of the line towns, was discussed. It was the sense of the meeting that the plan adopted last year should be followed, and that the working out of details should be left to the executive committee.

Chairman Williams of last year's finance committee reported that the amount collected for the 1912 celebration was \$6,662.88; amount disbursed, \$6,463.82, leaving a balance on hand of \$199.06.

Joint Land Commission—Notice of Hearings.

The Joint Land Commission resumed public hearings on Monday, May 26, 1913, and the following calendar was set:

Monday, May 26, DeBosque estate.

Tuesday, May 27, estate of Tabernilla.

Wednesday, May 28, estate of Cuatro Calles.

J. C. LUITWIELER, Secretary.

Certificate Refused to Steamship "Arica."

The Board of Local Inspectors, through its chairman, Lieut-Col. W. V. Judson, refused on May 13 to grant a certificate to the master of the steamship *Arica*, permitting him to accept passengers at the port of Balboa, because of its general unseaworthiness. The *Arica* is a steel screw steamer of 1,771 tons, belonging to the Pacific Steam Navigation Company. It was built by Laird Brothers of Birkenhead, England, in 1881. It has a length of 300 feet, breadth of 36.2 feet, and depth of 19.3 feet; and sails under registry from the port of Liverpool. It was for a long time on the run between Valparaiso, Chile,

and Panama, but was taken off and only re-established in the service a short time ago, having made but four voyages. Since the action of the Board of Local Inspectors, the company has decided to use the vessel at its anchorage in Panama Bay for storage and other purposes, displacing in this service the hulk of the old *Panama*, which will probably be taken out to sea and sunk.

Tennis Tournament.

The Isthmian Tennis Association free-for-all tournament, in singles, held at Ancon, May 11 and 18, 1913, was won by J. T. Neely of Ancon.

The summary follows:

Geo. Newbold defeated J. I. Kuhn, 6-3, 6-1.
G. M. Wells defeated Dr. A. B. Herrick, 4-6, 7-5, 6-3.

B. C. Poole defeated E. W. Tupper, 11-13, 9-7, 6-3.

G. M. Wells defeated Geo. Newbold, 6-4, 8-10, 6-3.

B. C. Poole defeated A. C. Fechtig, 4-6, 6-4, 7-5.

D. T. Edwards defeated H. Bartholomew, 6-1, 6-4.

J. T. Neely defeated Major J. P. Jervy by default.

F. Pearman defeated J. B. Shropshire, 6-3, 6-2.

C. E. Nevius defeated A. N. Otis, 6-0, 6-0.

J. W. Ross defeated Geo. R. Goethals, 6-4, 6-2.

R. W. Hart defeated E. C. Smith, Jr., 6-2, 6-1.

J. T. Neely defeated F. Pearman, 6-4, 6-4.

G. M. Wells defeated C. E. Nevius, 6-3, 3-6, 6-2.

B. C. Poole defeated D. T. Edwards, 3-6, 6-3, 6-3.

J. W. Ross defeated R. W. Hart, 7-5, 6-4.

J. T. Neely defeated G. M. Wells, 6-0, 6-4.

B. C. Poole defeated J. W. Ross, 5-7, 6-2, 6-4.

J. T. Neely defeated B. C. Poole, 6-3, 6-4.

Sale of Brass and Copper Shavings.

Borings and turnings from the brass working lathes, boring mills, milling machines, and other tools operating in the various shops of the Commission, amounting to 162,000 pounds, have been sold to the Argus Smelting Company of Brooklyn, N. Y., for \$18,322.20, which is at the rate of 11.31 cents per pound. The brass stick, rough brass castings, and bearings from which these borings and turnings were made are chiefly the product of the foundry at Gorgona shops. The borings are packed in large iron dump buckets, containing approximately 3,500 pounds each. The contractor is to remove them on or before May 27, 1913.

The Librarian of Congress has requested that he be supplied with two copies of all public documents printed and issued on the Isthmus by the Isthmian Canal Commission and Panama Railroad Company. Of those printed in Washington, he receives two copies direct from the Government Printing Office.

A fire caused by the accidental ignition of gasoline, occurred in a building owned by the Panama Banking Company at Empire at 9.58 p. m., on Saturday, May 10. The damage to building was \$250; to personal property \$15.

SAND BLAST MACHINE.

Modern Equipment for New Foundry at Balboa.

Award has been made to Thomas W. Pangborn of Hagerstown, Maryland, for a modern high pressure sand blast installation, which will be placed in the north lean-to of the new foundry at Balboa. The contract price is \$6,051.90, and delivery at Colon is promised within 120 days.

In the installation of this equipment, the sand blast machine is a separate compartment from the sand blast room. This arrangement leaves the blast room entirely free of equipment, space is conserved, and the apparatus is not subjected to the action of the sand and dust, no small factor in the life and continued successful operation of one of these machines. The sand as blown falls through the grated flooring into the hopper, then onto the elevator boot. The elevator carries it to the sand separating machine, where pieces of material, larger or smaller than desirable, are separated and deposited into a waste bin.

The dust laden air is taken from the blast room through the medium of suction pipes located below the grating. In going through the dust arrester, the dust is thoroughly separated from the air and falls into the hopper below the arrester. The clean air is sent back into the room through spaces in the ceiling. The chief advantage of this feature is that of insuring a suction and pressure force, the former from near the grating, and the latter from the ceiling, thus producing a constant current of air through the room, by which the ventilating efficiency is nearly doubled. In handling practically the same air over and over again, a satisfactory uniform temperature is maintained in the room at all times regardless of the outside temperature. This result is especially desirable on the Isthmus where the moisture conditions that exist at times would probably seriously affect the arrester screens.

To obtain the maximum ventilating efficiency and other advantages, the dust laden air is drawn through a dust arrester by a motor-driven exhaustor, and then blown into the room. While the dust handled is practically a powdery substance, the exhaustors on this machine are made about three times as heavy as other standard exhaust fans. The chief end to accomplish in the ventilating of a sand blast room is to keep the dust from rising higher in the room than the operator's waist line, and to remove it as fast as it is made. By having the suction force near the floor and the pressure force from above this condition is nearly attained.

The sand blast machine is equipped with a moisture and oil separator. The sand separating machine has the same motion that a moulder gives a hand riddle. The sand elevator is equipped with a rubber belt and malleable iron buckets. The scroll sheet and wheel blades of the exhaustor are $\frac{3}{4}$ of an inch thick. The dust arrester casing is made of No. 16 steel strengthened by angle iron riveted to the plates and then galvanized. The shaking of the screens is accomplished by a large pneumatic vibrator direct-connected to the screens, which, in addition to being effective is not destructive to the screen frames. The piping for the dust-handling system is made of No. 16 and No. 20 galvanized sheet iron, riveted and soldered.

LOST—Light-colored raincoat, either at Gatun or Colon, about April 15. Reward, if returned to Waldo A. Reiszner, Gatun.

CANAL MEDAL BAR LIST.

(Continued.)

The attached list contains the names of employees and exemployees of the Isthmian Canal Commission, who at some time during the past year completed their fourth year of continuous service on the Isthmus and are now entitled to their first service bar. The date shown opposite each name is that from which the bar service begins.

All changes or corrections should be reported to the Office of the Chairman, at Culebra, at an early date.

As soon as the list is revised, numbers will be assigned by alphabetical order of surnames, on both medal and bar lists, and the lists will be forwarded to the Washington Office of the Isthmian Canal Commission, where final arrangements will be made for the proper engraving. Distribution will be made about October 1 of the present year.

The heads of divisions are requested to carefully check their lists of American employes on the silver rolls, and to report any omissions on this list to the Office of the Chairman.

Name.	Date.	Name.	Date.	Name.	Date.	Name.	Date.	Name.	Date.
Piper, Edward L.....Aug.	4	O'Neill, John J.....Sept.	2	Decker, James H.....Sept.	27	Grier, William.....Oct.	20	Johnson, Charles H. Jr. Nov.	23
Mitchell, Walter D.....Aug.	5	Quam, Marshall.....Sept.	2	Jordan, Francis E.....Sept.	28	Cooper, Arthur.....Oct.	21	Nichols, J. N.....Nov.	24
Cuñ, Martin F.....Aug.	8	Yingling, George A.....Sept.	2	Patheier, John A.....Sept.	29	Aznoe, James L.....Oct.	23	Schuler, Frank P.....Nov.	25
Conner, John.....Aug.	10	Boyd, Allen S.....Sept.	3	Swanson, Knute A.....Sept.	29	Smith, Henderson C.....Oct.	23	White, Alfred.....Nov.	25
Conner, John.....Aug.	10	Dickson, Thomas H.....Sept.	3	Clark, Jessie W.....Oct.	1	Tupper, E. William.....Oct.	23	Emery, Edward L.....Nov.	28
Kitchin, Andrew G.....Aug.	10	Hicks, Alvah Q.....Sept.	3	Haussler, Ernest.....Oct.	4	Buck, Lawrence D.....Oct.	24	Lohmann, Ervin O.....Nov.	28
Peters, Claude.....Aug.	10	Neville, Herbert C.....Sept.	4	Korsan, Albert.....Oct.	4	Dannenberg, Frederick		Morrison, William G.....Nov.	28
Roberts, Thomas.....Aug.	10	Hull, Robert H.....Sept.	5	Reiley, Herbert J.....Oct.	4	S.....Oct.	24	Fraser, Alex. M.....Nov.	29
Sands, Fred W.....Aug.	10	Wilke, James M.....Sept.	5	Stewart, James.....Oct.	4	Morgan, Charles P.....Oct.	26	Love, William.....Nov.	29
Weyler, Adolf.....Aug.	10	Bryan, Joe.....Sept.	8	Cook, Richard R.....Oct.	5	Hilton, Albert C.....Oct.	28	Chambers, Albert.....Dec.	1
Beallier, Archibald F.....Aug.	14	Hammer, Hubert H.....Sept.	8	Cooper, Charles W.....Oct.	5	Jordan, Thomas H.....Oct.	29	Roettgering, Otto J.....Dec.	1
Greuling, John J.....Aug.	14	Kent, Wiley F.....Sept.	8	Cushing, John C.....Oct.	5	Cook, Carl.....Nov.	1	Rosteck, William M.....Dec.	1
Guiney, James.....Aug.	14	Lloyd, Howard M.....Sept.	8	Weiser, Josef.....Oct.	5	Mitchell, Abram V.....Nov.	1	Udey, Arthur.....Dec.	1
Mellon, Robert.....Aug.	14	Sims, Charles A.....Sept.	8	Robinson, Fred W.....Oct.	6	Smithwick, Georgia I.....Nov.	1	Gibson, John.....Dec.	2
Urch, Lillian M.....Aug.	14	French, R. V., Jr.....Sept.	9	Burns, Blythe M.....Oct.	7	Wintringham, Chas. H.....Nov.	1	Harrell, James C.....Dec.	2
Bianchi, Elvezio.....Aug.	15	Carigan, William E.....Sept.	11	Davies, Evan D.....Oct.	7	Carollo, Faustino F.....Nov.	2	Voigt, Albert D.....Dec.	3
Hodges, Hugh H.....Aug.	17	Key, Frank M.....Sept.	11	Abendroth, William G.....Oct.	8	Orr, William T.....Nov.	2	Sanger, Victor.....Dec.	4
Brandt, Delvin W.....Aug.	18	Shearer, Harry W.....Sept.	11	Fletcher, Cecil G.....Oct.	8	Cheatham, William B.....Nov.	4	McIntyre, James J.....Nov.	5
Cassell, John S.....Aug.	18	Owens, Edward.....Sept.	12	Goldmark, Henry.....Oct.	8	Riley, Michael J.....Nov.	5	Robitoy, Louis P.....Dec.	5
McMillan, William P.....Aug.	18	Gomo, John.....Sept.	14	Hendricks, A. B.....Oct.	8	Sundquist, Theodore.....Nov.	5	McQueen, Philip O.....Dec.	6
Thompson, Robert C.....Aug.	18	Mannheim, Joseph.....Sept.	14	Mason, Lewis A.....Oct.	8	Begley, Peter G.....Nov.	7	Walker, Charles R.....Dec.	7
Gill, Fred A.....Aug.	19	Saphir, Volanti.....Sept.	14	Shokoff, August.....Oct.	8	Wilson, John M.....Nov.	7	Boggs, Edward M.....Dec.	8
Modin, Harry.....Aug.	19	Swinehart, Robert.....Sept.	15	Flowers, Jewel L.....Oct.	10	Carlow, William H.....Nov.	9	Witmer, Wm H., Jr.....Dec.	10
Dagley, Farrell H.....Aug.	20	Jeffries, Joseph.....Sept.	16	Jackson, Ephraim F.....Oct.	10	Hoffman, Frank J.....Nov.	9	Wilson, William H.....Dec.	12
Butler, Mary M.....Aug.	21	Deavours, Robert C.....Sept.	17	Black, Charles A.....Oct.	11	Huffman, Edward W.....Nov.	10	Healey, George W.....Dec.	14
Thomas, Charles E.....Aug.	22	Burbage, John.....Sept.	18	Clark, George.....Oct.	12	Morgan, Charles D.....Nov.	10	Wells, William A.....Dec.	14
Casey, Austin B.....Aug.	23	Buschmann, Harry.....Sept.	18	Lee, Benson E.....Oct.	14	Steiner, George W.....Nov.	10	Langworthy, John.....Dec.	15
Duncan, Arthur.....Aug.	23	Cole, Harry O.....Sept.	18	McGrath, John T.....Oct.	14	Collins, John O.....Nov.	11	LaSera, Tony.....Dec.	18
Hersom, Charles A.....Aug.	23	Nixon, Courtland.....Sept.	18	McKinney, Amos.....Oct.	14	Greenman, Almon A.....Nov.	11	McAdam, Harry.....Dec.	18
Speicher, Harry E.....Aug.	24	Coveleski, Joseph P.....Sept.	18	Baumis, Conrad.....Oct.	16	Cammack, Charles H.....Nov.	12	Nelson, Edward.....Dec.	18
Waters, Thomas.....Aug.	24	Reichard, James H.....Sept.	18	Little, Charles C.....Oct.	16	Kralce, William B.....Nov.	12	Cooper, Hal B.....Dec.	20
Taylor, Samuel B.....Aug.	26	Baumer, Sevier S.....Sept.	20	O'Keefe, Thomas F.....Oct.	16	Graham, Alexander P.....Nov.	13	Stevens, Charles J.....Dec.	20
Cline, Robert L.....Aug.	29	Clear, Thomas L.....Sept.	21	Sasse, Frank P.....Oct.	16	Watkins, Frank S.....Nov.	13	Grund, William E.....Dec.	21
Teall, Gilbert E.....Aug.	29	Doyle, Andrew.....Sept.	23	McCray, Grace E.....Oct.	19	Rands, Joseph R.....Nov.	14	Davis, Clarence E.....Dec.	22
Ferguson, Rance.....Sept.	1	Lipscomb, Brooks.....Sept.	23	MacKenzie, Alexander Oct.	19	White, Harry R.....Nov.	16	Greame, Andrew.....Dec.	22
Grant, J. E.....Sept.	1	Reed, George T.....Sept.	23	Purscell, Thomas J.....Oct.	19	Roberts, George.....Nov.	18	Keene, Raymond F.....Dec.	22
Falk, Leopold.....Sept.	2	Brignac, George D.....Sept.	24	Codrick, Edmond C.....Oct.	20	Thomas, Augustus.....Nov.	20	Fomon, Harry L.....Dec.	28
McHenry, William D.....Sept.	2	Albert, James T.....Sept.	27	Frederiksen, Freder-		May, Duncan.....Nov.	22	Flood, Arthur.....Dec.	29
Mellon, John J.....Sept.	2	Clifton, Guy L.....Sept.	27	ik P.....Oct.	20	Daniels, Jessie E.....Nov.	23	Loken, Harold O.....Dec.	29

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule for moving pictures for the week, May 26 to 31 is as follows: Monday, Cristobal; Tuesday, Gorgona; Wednesday, Gatun; Thursday, Culebra; Friday, Corozal and Porto Bello; Saturday, Empire.

Many people on the Isthmus will remember Miss Mary Lyon who was a reader in the Eberly Concert Company, which visited the Isthmus last year. This year Miss Lyon will head a company of her own, arriving on the Isthmus on May 26, for a series of concerts in the Commission clubhouses. The company will consist of Miss Lyon, reader; Miss Conover, soprano; Miss Carey, violinist; Mr. Cooley, baritone; and Mr. Boughten, pianist. The dates are, as follows: May 28, Corozal; May 29, Gorgona; May 30, Cristobal; May 31, Porto Bello; June 3, Gatun; June 4, Empire; June 5, Culebra.

The standing in the American duckpin bowling league on May 19, follows:

Team	Won.	Lost.	P. C.
Empire.....	10	8	.704
Cristobal.....	18	9	.667
Corozal.....	8	16	.333
Gatun.....	6	18	.250

EMPIRE.

A handicap pool tournament has been started in which the men working nights are playing. Ten men have entered.

The Spanish class for beginners started Wednesday, May 21, and will meet twice a week, namely, Wednesday and Friday mornings at 9.30 o'clock.

Empire took three games of duckpins from the Gatun team on Saturday, May 17. The games finished the American league schedule. The scores follow:

Empire.....	467	362	455
Gatun.....	424	401	430

On Saturday, May 24, the Camp Elliott indoor baseball team will play the Empire team at Empire.

CULEBRA.

Tuesdays and Thursdays have been set aside for bowling tenpins on the local alleys. A local tenpin tournament will be arranged shortly.

The excursion on May 30 over the locks and through the Cut, for the benefit of Culebra Y. M. C. A. members and their friends, will be run as originally stated.

GORGONA.

On account of the depopulation of Gorgona the attendance at the entertainments is smaller. Only 290 people attended the entertainment on Monday evening. The next picture show will be a special entertainment on Thursday evening; the regular show will be on Saturday evening, May 24.

The gymnasium classes meet on Tuesday and Thursday evenings. All men are invited.

The regular debating club will meet on Friday evening, and every one is invited. An especially entertaining program has been prepared.

On Sunday night, May 25, a special service will be given. The superintendent of schools, Mr. F. A. Gause, will give an address on Lincoln, and a piano recital will be given by Miss Cervera of Panama. Every one in Gorgona is invited to attend.

GATUN.

The Empire chess team came to Gatun Saturday night, May 17, winning most of the games. Corozal will play here Saturday.

The Cristobal and Corozal American league duckpin

bowlers bowled on the Gatun alleys Saturday night. The results of the games were, as follows:

Cristobal.....	418	426	443
Corozal.....	398	417	387

A new cabinet for the distribution of the mail has been placed in the lobby.

A two-man ragtime bowling tournament was started on the Gatun alleys on Monday night, May 19.

Mr. S. P. Verner of Matachin gave an interesting lecture at the Gatun clubhouse, Wednesday, May 21, under the auspices of the "Forum," his topic being "Fifteen years in Central Africa."

Gatun will play Cristobal a game of indoor baseball on the Gatun court, Saturday night, May 24. This will be the first game between these two teams.

CRISTOBAL.

There will be a meeting of the "Forum" on Wednesday, May 28. The program will be announced later.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending May 31, 1913 (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
May 25.....	1.01	7.13	1.26	7.23	
May 26.....	1.48	8.00	2.17	8.13	
May 27.....	2.40	8.50	3.12	9.08	
May 28.....	3.33	9.45	4.12	10.10	
May 29.....	4.28	10.40	5.10	11.13	
May 30.....	5.23	11.34	6.03		
		P.M.			
May 31.....	12.12	6.15	12.23	6.52	

OFFICIAL CIRCULARS.

Appointment of General Superintendent, Panama Railroad and Steamship Line.

CULEBRA, C. Z., May 7, 1913.

GENERAL ORDER:

Mr. John D. Patterson is hereby appointed General Superintendent of the Panama Railroad and Steamship Line on the Isthmus, vice Mr. J. A. Smith whose resignation takes effect May 31, 1913, and will relieve Mr. Smith of the duties of that position effective Monday, the 19th instant.

GEO. W. GOETHALS,
President.

Concessions to the Fourth of July Celebration.

CULEBRA, C. Z., May 20, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

I have approved the following in connection with the 1913 Fourth of July celebration for which arrangements are now under way:

1. Authority to use "penalty" envelopes in connection with official business of the celebration.
2. Work performed by any department or division of the Commission or the Panama Railroad Company, upon the request of the committee in charge of the celebration, will carry the same surcharge as work done by one department or division for another.

3. Floating equipment of the Commission and Panama Railroad Company may be used in connection with any program outlined for the celebration, with the understanding that such use will be in accordance with the rules and regulations prescribed by the Board of Local Inspectors of the Canal Zone.

4. Payments of amounts subscribed by employees toward the celebration may be made by payroll deduction, but such deduction shall be made only upon the written request of the employee subscribing. Employees may, of course, pay their subscriptions in cash.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Removal of Scrap.

CULEBRA, C. Z., May 20, 1913.

CIRCULAR No. 426-B:

The provisions of circular No. 426-A are hereby modified as follows:

No employee of the Isthmian Canal Commission or of the Panama Railroad Company shall inform any contractor or contractors, directly or indirectly, regarding any scrap that it is desired to have loaded on cars. In all cases where it is desired to remove scrap, the Depot Quartermaster must be requested either by letter or telephone to have the inspector report to the employee concerned to locate the scrap. The accountable official must be prepared to give information immediately regarding the original source (French or American), whether on his property records, and if French scrap, whether it results from scrap repairs to equipment which has been in use by the Isthmian Canal Commission.

Failure to observe the foregoing instructions may result in the discharge of the employee concerned.

GEO. W. GOETHALS, Chairman.

Installation of Tungsten Lamps.

CULEBRA, C. Z., May 20, 1913.

CIRCULAR No. 336-E:

The installation of tungsten or other metallic-filament lamps for all departments and divisions of the Isthmian Canal Commission and the Panama Railroad Company will be hereafter governed by the following rule, viz: Tungsten or other metallic-filament lamps may be installed in place of carbon-filament lamps when the latter require renewal, except in such locations as are considered by the electrical department of the Mechanical Division to be unsuitable for the use of tungsten or other metallic-filament lamps.

Circular No. 336-C is hereby annulled.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Increased Pay of Employees Appointed to Fill Vacancies.

CULEBRA, C. Z., May 16, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

Sir: The receipt is acknowledged of your letter of May 10 on the general subject of allowing an employee the increased pay of a position to which he has been permanently assigned upon termination of service of the incumbent who has accumulated leave due, and

referring specifically to the case of Mr. C. O. Herring, who was assigned to fill the vacancy caused by the resignation of Mr. A. B. Caruthers, the latter having 84 days accumulated leave to his credit.

In the future, in any case where the exigencies of the service render it absolutely necessary to fill a position which has become vacant, the employee assigned to such vacancy if receiving a lower rate of pay may, upon recommendation of the head of his department and with my approval in each case, be promoted after not less than thirty days, provided he has demonstrated his ability to satisfactorily perform the duties of the higher grade position. I have accordingly approved Mr. Herring's increase in salary, effective May 1, 1913, as originally requested.

This cancels the instructions contained in my letter to the division engineer of the Central Division, dated September 25, 1912, copies of which were furnished heads of departments and divisions.

Respectfully.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Estimate of Gravel Required.

CULEBRA, C. Z., May 12, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

With a view to determining program of work in connection with the obtaining of a supply of gravel from the Chagres River, it is requested that you furnish, as soon as practicable, an estimate of the amount of gravel that you can economically use in your work for the next two years, assuming that the gravel mixed with sand is of suitable quality for concrete without a further addition of sand and that it can be furnished on cars at Gamboa for about thirty cents per cubic yard.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon and Balboa, during the week ending May 17:

Sixola, May 11, from New York, with 600 pieces car wheels for Mechanical Division; 10 pieces castings, First Division; 41 cases babbitt metal, 10 cases sheet iron, 8 packages hardware, for stock.

Emil L. Boas, May 12, from New York, with 92 cases paper, for stock; 50 packages buoy parts, for Light-house Division.

Parissima, May 12, from New Orleans, with 558 pieces white oak lumber, 40 bundles brake wheels, for Mechanical Division; 20 pieces cast iron pipe, for Fifth Division; 916 bales alfalfa hay, 6 barrels wire clamps, 295 pieces-cross ties, 63 pieces piling, 3,667 pieces yellow pine lumber, 42 pieces white oak lumber, for stock.

Colon, May 13, from New York, with 3,347 pieces sewer pipe, for Fifth Division; 33 cases electrical material, for Panama Railroad Company; 40 cases gate machinery, 31 reels electric cable, 143 cases electric material, for First Division; 88 pieces steel rails, 45 bundles splice bars, 27 cases copper wire, 15 barrels brass castings, 15 cases tools, 300 pieces castings, for Mechanical Division; 36 bags cork, 29 cases paper napkins, 10 cases enameled cups, 400 pieces black pipe, 3,750 bundles, splice bars, 42 cases wire cloth, 32 crates handles, 14 bales mopheds, 20 cases muriatic acid, 25 pieces steel channels, 25 pieces steel beams, 17 cases chains, for

stock; and a miscellaneous cargo, the whole consisting of 8,700 packages, weighing 850 tons.

Almirante, May 14, from New York, with 8 cases hard ware, 13 cases rubber hose, for stock; 550 pieces car wheels, for Mechanical Division.

Turrialba, May 15, from New Orleans, with 41 pieces pipe and fittings, for Fifth Division; 4 reels steel cable, for Mechanical Division; 21 pieces castings, 15 rolls cotton duck, 63 pieces piling, 277 pieces lumber, for stock.

Pleiades, May 15, from San Francisco, with 73 cases salt water soap, 2,256 cases Trojan powder, for stock.

Misdirected Letters.

ANCON, C. Z., May 21, 1913.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Austin, D. A.	Matthew, Miss Julia
Brown, Hubert W.	McCarty, William
Camp, Dave D.	Mitchell, G. H.
Cano, C. E.	Montoute, Emile M.
Connad, A. J.	Parker, Dr. N. M.
Fischer, Robert H.	Phayne, F.
Forsberg, Ed.	Plummer, A.
Fotheringham, A. Y.	Rumble, Manley
Fouley, G. I.	Schuler, Mrs. Frank
Fuller, John N.	Searle, Roscoe
Gatiss, Robert B.	Smith, N.
Gardiner, Clifford	Thalheim, Allan
Hall, C. P.	Underwood, Rox
Henshaw, C. W.	White, C. J.
Holly, George F.	Whitelen, Mrs. Samuel
Johnston, F. L.	Woodman, N.
Jones, Wm. A.	Wuster, Charles

Legal Notice.

United States of America } First Judicial Circuit.

Canal Zone.

The following named Americans citizens died intestate leaving personal property within the Canal Zone to the amount stated:

	U. S. currency.
Andrew R. Murphy.....	3.70
John Ryan.....	2.40
George Peter.....	.83
John Williams.....	2.00
Michael, Coogan.....	29.50
Harry Tafel.....	8.00
Henry G. Day.....	63.58

The collector of revenues has filed a petition for the escheat of the above named estates, in accordance with Section 779 of the Code of Civil Procedure.

Notice is hereby given to all heirs or creditors of the above estates to appear before this Court in the courthouse at Ancon, on July 12, 1913, at 9 o'clock a. m., to establish their claims or to show cause why the said estates should not escheat to the Government of the Canal Zone.

WALTER EMERY,
Circuit Court Clerk.

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa, at 9 o'clock Tuesday, Thursday and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

DRY SEASON RAINFALL.

The precipitation during the dry season now drawing to a close has been everywhere below normal, but much heavier than the rainfall during the corresponding period of 1911-1912.

The subjoined table presents the accumulated rainfall at selected stations, and for the whole Canal Zone, during the period from December, 1912, to April, 1913, inclusive, compared with the fall during the dry season of 1911-1912, and with the station normals for the same period.

STATION.	Normal rainfall December to April.	Years of Record.	Accumulated Dec. 1912 to April 1913.*	Per cent of normal.	Accumulated rainfall dry season 1912 (Dec. 1911 to April, 1912).	Per cent of normal.
Ancon	9.32	16	4.58	49	4.76	50
Culebra	14.33	23	8.50	59	8.85	27
Gamboa	13.96	29	8.11	58	3.01	22
Alhajuela	12.70	14	4.18	33	1.02	8
Gorgona	13.63	9	11.78	86	2.29	17
Colon	23.52	43	23.41	100	6.13	26
Porto Bello	42.32	6	22.90	54	5.61	13
Average for Zone (7 stations)	18.54		11.92	64	5.18	28

*Settled dry season weather did not begin this year until January, but the period from December to April inclusive is used for comparison with the previous dry season, which continued from December, 1911 to April, 1912, inclusive.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning May 21, 1913:

FRESH MEATS.	Price
Mutton—Stewing, per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire forequarter (not trimmed, 10 pounds and over), per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Legs (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	17
Chops, per pound.....	26
Loin for roasting, per pound.....	26
Cutlets, per pound.....	30
Pork—Loin chops or roast, per pound.....	17
Pigs Head, about 6½ lbs., per pound.....	10
Pigs Backbone, per pound.....	15
Beef—Suet, per pound.....	2
Soup, per pound.....	5
Stew, per pound.....	8
Plate, per pound.....	9
Corned, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Chuck, roast, 3 lbs. and over, per pound.....	12
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds) per pound.....	18
Sirloin roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, Chuck per pound.....	12½
Round, per pound.....	13
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds), per pound.....	20
Tenderloin (Western) per pound.....	30
MISCELLANEOUS.	
Livers—Beef, per pound.....	11
Calf, each.....	60
Half, each.....	30
Steak, Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	13
Frankfurter, per pound.....	13
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	20
Pork sausage meat, per pound.....	20
Sweetbread, beef, per pound.....	40
Eggs, fresh, dozen.....	25
one-half dozen only.....	13
Bluefish, per pound.....	15
Halibut, fresh, per pound.....	15
POULTRY AND GAME.	
Chicken—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds, each.....	1.25
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00
Fowls, each.....	1.00
Ducks, Western, about 4½ pounds, each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	50
Rabbits, skinned, each.....	30
Ducks, blackhead, pair.....	60
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants, per pair.....	1.30
CURED AND PICKLED MEATS.	
Ham—Sugar cured, per pound.....	20
Sliced, per pound.....	22
Half, for boiling, per pound.....	21
Boiled, per pound.....	28
Hocks, per pound.....	28
Beef, salt, family, per pound.....	12
Bacon—Breakfast, whole piece, per pound.....	25
Sliced, per pound.....	26
Ham, lunch, per pound.....	32
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00
Pigs feet, per pound.....	9
Tongues, per pound.....	18
DAIRY PRODUCTS.	
Butter—Creamery, special, per pound.....	*36
Sheffield Farms, extra fancy, per lb.....	46
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28

Cheese—Edam, each.....	1.00
Parmesan, per pound.....	35
Gouda, per pound.....	*30
Snappy, per cake.....	10
Milk (Certified), per bottle.....	*20
Fer-mil-lac, bottle.....	*20
Ice cream, quart.....	125
1-gallon.....	150

VEGETABLES AND FRUITS.

Beets, per pound.....	3
Celery, per head.....	11
Cabbage, per pound.....	3
Cucumbers, per pound.....	14
Carrots, per pound.....	3
Egg Plant, per pound.....	10
Lettuce.....	*12
Onions, per pound.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	2
Parsnips, per pound.....	3½
Parsley, bunch.....	5
Rhubarb, per pound.....	4
Squash, per pound.....	7
Turnips, per pound.....	3
Tomatoes.....	10
Apples, per pound.....	16
Grape fruit, tropical, each.....	4
American, each.....	8
Lemons, dozen.....	24
Limes, per 100.....	80
Oranges, Jamaica, per dozen.....	12

*Indicates reductions from last list.
*Indicates 5 cents allowed for return of bottle.
†Indicates advance on last list.
††Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock, next lightest weight is supplied and refund note sent for difference.
‡Sold only from commissaries; no orders taken for delivery.

Rainfall from May 1 to May 17, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—			
Ancon.....	1.66	9	5.92
Balboa.....	1.51	11	5.95
*Miraflores.....	2.45	16	7.56
Pedro Miguel.....	2.36	7	7.52
Rio Grande.....	2.02	7	6.71
Central Section—			
Culebra.....	2.00	7	6.24
*Camacho.....	2.00	16	7.70
Empire.....	1.91	11	5.63
Gamboa.....	1.75	15	6.76
*Juan Mina.....	2.02	7	7.33
Alhajuela.....	1.33	8	6.26
*El Vigia.....	1.90	15	7.49
*Gorgona.....	1.70	15	7.13
*Frijoles.....	3.07	16	11.46
*Monte Lirio.....	2.26	15	9.92
Atlantic Section—			
Gatun.....	3.19	14	9.62
*Brazos Brook.....	3.90	14	10.87
Colon.....	2.73	14	11.20
Porto Bello.....	10.57	15	27.34

*Standard rain gage—readings at 5 p. m. daily.
Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., May 16.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, May 17, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	Vigia.	Alhajuela.	Gamboa.	Gatun Lake.
Sun., May 11.....	127.3	92.7	49.1	49.1
Mon., May 12.....	127.3	93.4	49.2	49.0
Tues., May 13.....	125.8	92.0	49.0	49.0
Wed., May 14.....	125.9	92.1	49.0	49.0
Thurs., May 15.....	134.1	98.3	51.1	49.1
Fri., May 16.....	131.0	96.0	50.2	49.4
Sat., May 17.....	128.2	94.4	49.9	49.5
Height of low water to nearest foot.....	125.0	91.0	44.0	

Auction Sale of Dairy Cows.

ANCON HOSPITAL, May 3, 1913.

On Saturday, May 31, 1913, at 9 a. m., there will be sold at public sale at the Ancon Hospital dairy, eight dairy cows between three and nine years of age, Also one brown Swiss bull eight years old and a young bull calf. Terms of sale, cash.

The dairy is located near the insane asylum buildings in the rear of the hospital grounds.

CHAS. F. MASON, Superintendent.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Panama.....	P. R. R. Tuesday.....	May 20
Allianca.....	P. R. R. Monday.....	May 26
Colon.....	P. R. R. Monday.....	June 2
Advance.....	P. R. R. Saturday.....	June 7
Panama.....	P. R. R. Friday.....	June 13
Allianca.....	P. R. R. Thursday.....	June 19
Colon.....	P. R. R. Thursday.....	June 26

CRISTOBAL TO NEW YORK.

Advance.....	P. R. R. Monday.....	May 26
Panama.....	P. R. R. Sunday.....	June 1
Allianca.....	P. R. R. Saturday.....	June 7
Colon.....	P. R. R. Saturday.....	June 14
Advance.....	P. R. R. Thursday.....	June 19
Panama.....	P. R. R. Wednesday.....	June 25
Allianca.....	P. R. R. Tuesday.....	July 1

NEW YORK TO COLON.

Santa Marta.....	U. F. C. Wednesday.....	May 14
Carl Schurz.....	H. A. Saturday.....	May 17
Pastores.....	U. F. C. Saturday.....	May 17
Metapan.....	U. F. C. Wednesday.....	May 21
Prinz August Wilhelm.....	H. A. Saturday.....	May 24
Tivives.....	U. F. C. Saturday.....	May 24
Tagus.....	R. M. Saturday.....	May 24
Zacapa.....	U. F. C. Wednesday.....	May 28
Emil L. Boas.....	H. A. Saturday.....	May 31
Sixola.....	U. F. C. Saturday.....	May 31
Prinz Joachim.....	H. A. Saturday.....	June 7
Oruba.....	R. M. Saturday.....	June 7
Thames.....	R. M. Saturday.....	June 21

COLON TO NEW YORK.

Almirante.....	U. F. C. Thursday.....	May 22
Oruba.....	R. M. Tuesday.....	May 27
Prinz Joachim.....	H. A. Tuesday.....	May 27
Carrillo.....	U. F. C. Tuesday.....	May 27
Santa Marta.....	U. F. C. Thursday.....	May 29
Pastores.....	U. F. C. Tuesday.....	June 3
Carl Schurz.....	H. A. Wednesday.....	June 4
Metapan.....	U. F. C. Thursday.....	June 5
Tivives.....	U. F. C. Tuesday.....	June 10
Thames.....	R. M. Tuesday.....	June 10
Prinz August Wilhelm.....	H. A. Tuesday.....	June 10
Zacapa.....	U. F. C. Thursday.....	June 12
Emil L. Boas.....	H. A. Tuesday.....	June 17
Sixola.....	U. F. C. Tuesday.....	June 17
Prinz Joachim.....	H. A. Tuesday.....	June 24

NEW ORLEANS TO COLON.

Abangarez.....	U. F. C. Saturday.....	May 17
Heredia.....	U. F. C. Wednesday.....	May 21
Atenas.....	U. F. C. Saturday.....	May 24
Parismina.....	U. F. C. Wednesday.....	May 28
Turrialba.....	U. F. C. Saturday.....	May 31

COLON TO NEW ORLEANS.

Turrialba.....	U. F. C. Thursday.....	May 22
Cartago.....	U. F. C. Saturday.....	May 24
Abangarez.....	U. F. C. Thursday.....	May 29
Heredia.....	U. F. C. Saturday.....	May 31
Atenas.....	U. F. C. Thursday.....	June 5
Parismina.....	U. F. C. Saturday.....	June 7
Turrialba.....	U. F. C. Thursday.....	June 12

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays at 3 p. m.; ships for New York via Kingston on Tuesdays at 10 a. m. and Thursdays at 10 a. m.; for Bocas del Toro on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct, Tuesdays at 3 p. m.

The Panama Steamship Company's steamer *Panama* will sail from Panama for Aguadulce and Federal on May 27, and the National Navigation Company of Panama will have sailings to those ports, from Panama, on May 30, June 10 and 25.

Hamburg-American steamers sail for New York, via Kingston and Santiago de Cuba on Tuesdays; the *Prinz Joachim* and *Prinz August Wilhelm* at 10 a. m., and the *Emil L. Boas* and *Carl Schurz* at 2 p. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending May 17:

Arrivals—May 12, *Manavi*, from intermediate ports; May 12, *Quillota*, from Valparaiso; May 13, *Pachitea*, from Callao; May 14, *Pleides*, from San Francisco; May 16, *Ecuador*, from Guayaquil.

Departures—May 12, *Uribamba*, to Ilo, Peru; May 13, *Aysem*, to Valparaiso; May 11, *Santa Maria*, to San Francisco; May 16, *San Juan*, to San Francisco; May 17, *Lyra*, to San Francisco.



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Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Massive Masonry of Gatun Locks Completed.

Massive masonry for Gatun Locks was completed on May 21, when the last of the piers for the north approach wall was brought to full height. The steel girders between piers, for supporting the tracks for towing locomotives, have all been placed. The work of encasing the girders in concrete will be done from the top of the wall, as will the grouting of tracks and the general finishing work. The cofferdam across the lower end of the locks has been removed, and water can be let in at the lower end whenever the sea gates are ready for operation. June 1 is the date set in the contract for the completion of these gates. As soon as they are finished, the barrier of earth between the locks and the Atlantic entrance channel can be removed. This will require the operation of three pipeline suction dredges for about three months.

Removal of Trestle over Gatun Spillway Dam.

The high trestle above the ogee of the Gatun Spillway is to be removed, from its west end to the first of the piers near the center which contains machinery for controlling the flow of water through the temporary sluice gates at the bottom of the ogee. The trestle crosses the tops of the piers between which the spillway gates have been placed; it will be removed a span at a time and coincidentally the piers will be built from their present elevation at 95 feet above sea-level to final height of 115 feet, and the permanent footbridge will be built between them.

The ogee of the dam having been completed to its height of 69 feet above sealevel during the past dry season, the sluice gates afford the present means of keeping the water below that level. When it is desired finally to close the sluices, the valves and their operating machinery at these openings will be removed, and the openings will be filled with concrete. To accomplish this, the valves will be shut, and weighted timber bulkheads will be dropped

in dead water into grooves on the upstream side of the dam, to close the apertures. When these have been satisfactorily adjusted, the machinery will be removed and the holes will be filled. The sluice gates are three in number, eight by 18 feet in section. When the apertures have been closed, the rest of the trestle will be removed, and the center piers and footbridge thereon completed.

Steamshovels Meet at Grade in Culebra Cut.

Steamshovel No. 222, manned by J. S. Kirk, engineer, and U. L. Hill, craneman; and steamshovel No. 230, manned by D. J. McDonald, engineer, and J. V. Rosenberry, craneman, met at Canal grade in Culebra Cut, at about 4.30 p. m., on Tuesday, May 20, at Station 1765, about opposite the residence of Col. H. F. Hodges in Culebra. This is the first through steamshovel cut to grade in the Culebra Cut section.

Repairs to Las Sabanas Road.

Repairs to Las Sabanas road, beginning at the Caledonia bridge and extending to the Zone boundary line, have been authorized at an estimated cost of \$1,700, of which about \$500 will be expended for material, and \$1,200 for labor. The estimate is based upon repairing the ruts and uneven places, some of which have been caused by cutting ditches across the road in making sewer and water connections, and some by the laying of the tramway tracks. In view of the fact that the heavy traffic over this road must be maintained while the repairs are being made, it was decided not to disturb more of the surface than is necessary to renew it where the ruts and low places occur. The Sabanas road, inside the Zone boundaries, was completely made over a few months ago.

Work at Porto Bello Quarry.

Additional rolling stock has been placed in service at Porto Bello in connection with the quarry operations at that point, and more will be available soon. The track conditions are better than formerly, and a 70-ton steamshovel, equipped with a crane boom, has been stationed at the dock for loading barges, in addition to the cranes in service. Three steamshovels are operated from 6.30 a. m. to 2.30 p. m., and two from 2.30 p. m. to 6.30 p. m. It is expected that the improved facilities will result in an increased output of rock for the west breakwater.

New Mules for Canal Work.

The need for teams for road construction work, scraping backfill at Gatun Locks, and grading the proposed new townsite at Balboa, in addition to the regular work for the Sanitary Department and in making deliveries, caused the Quartermaster's Department to order 50 mules from the United States, which arrived on May 26.

This is the first large importation of new stock since 1909. The public animals of the

Commission have been in service an average of seven years. Those now in service comprise 354 mules and 84 horses. About fifty die, or are condemned and sold, each year. In addition to this average, 22 mules died in 1910 during an epidemic of a trypanosoma disease, analogous to the surra of the Philippine Islands and to the "sleeping sickness" of Africa.

The lowest bid on the latest supply was \$211 each, delivered at the dock at New Orleans. Other purchases in the past have been, as follows: January, 1909, 45 mules at \$157.50, delivered at stockyards, Chicago; February, 1909, 50 mules at \$169.50, delivered at stockyards, Chicago; September, 1909, 50 mules at \$198.50, delivered at dock at New Orleans.

Renewed Activity of Slide at Culebra.

Another movement occurred in the slide on the east bank of Culebra Cut, opposite Culebra village, between 4 and 5 p. m., Monday, May 26, during the midst of a heavy rain. The action was identical with three or four similar movements which have characterized this slide in the past—a sinking of a mass of material in the bank, and an upheaval of the bottom.

All track but one, that on the west side of the Cut, were placed out of commission, and a train of Lidgerwoods, which was being loaded at this point, was partly covered. Two steamshovels were also caught, but one dug itself out.

Bids for Dynamite.

Bids were opened in Washington on May 17, under circular No. 775, for furnishing dynamite for the Canal work for the six months period beginning July 1 and ending December 31, 1913, in the following quantities:

1,644,750 pounds of 45 per cent dynamite, in cartridges 1½ by 8 inches;

410,500 pounds of 60 per cent dynamite, in cartridges 1½ by 8 inches;

130,000 pounds of 60 per cent dynamite, in cartridges 2 by 8 inches.

The Trojan Powder Company bid on one-third only of the explosives under Item 1, at \$0.10885 per pound, and one-third only of that under Item 2, at \$0.12135 per pound, offering a powder in substitution for dynamite.

The E. I. Dupont de Nemours Powder Company bid on the dynamite under Item 1, at \$0.1117 per pound, and the dynamite under Items 2 and 3, at \$0.1223 per pound.

Award of one-third of the quantity called for under Items 1 and 2 was made to the Trojan Powder Company at the prices named, and the remainder of the amounts ordered under these two items, and all of the dynamite under Item 3, were awarded to the Dupont de Nemours Powder Company, in accordance with its proposal.

Under the existing contracts, dynamite is being supplied by the Keystone Powder

NOTES OF PROGRESS.

(Continued).

Company, and the Trojan Powder Company, at the following prices: Keystone—\$0.1125 for 45 per cent dynamite; \$0.1245 for 60 per cent ordinary and 60 per cent special. Trojan—\$0.1095 for 45 per cent dynamite, and \$0.1122 for 60 per cent. Under the new awards, the prices are lower.

Concrete Work in Locks and Spillways.

Concrete work in the Canal locks is nearly completed, the aggregate amount in place at the close of work on May 24, being 4,457,568 cubic yards.

A statement of the concrete laid in the six locks of the Canal, and in Gatun and Miraflores spillways, as of May 24, follows:

GATUN LOCKS.		Concrete laid.
May 18.....		228
May 19.....		464
May 20.....		512
May 21.....		366
May 22.....		484
May 23.....		308
May 24.....		424

Total..... 2,786
Previously reported..... 2,031,887

Grand total..... 2,034,673

PEDRO MIGUEL LOCK.		Concrete laid.
May 19.....		48
May 20.....		15
May 21.....		35
May 22.....		58
May 23.....		33

Total..... 189
Previously reported..... 920,835

Grand total..... 921,024

MIRAFLORES LOCKS.		Concrete laid.
May 18.....		74
May 19.....		21
May 20.....		30
May 21.....		81
May 22.....		78
May 23.....		55
May 24.....		55

Total..... 394
Previously reported..... 1,501,477

Grand total..... 1,501,871

GATUN SPILLWAY.*		Concrete laid.
May 19.....		98
May 20.....		40
May 21.....		34
May 22.....		80
May 23.....		33
May 24.....		93

Total..... 378
Previously reported..... 226,140

Grand total..... 226,518

MIRAFLORES SPILLWAY.		Concrete laid.
May 19.....		728
May 20.....		681
May 21.....		953
May 22.....		969
May 23.....		1,013
May 24.....		1,041

Total..... 5,385
Previously reported..... 32,892

Grand total..... 38,277

*The figures for Gatun spillway include the concrete placed in the hydroelectric station, 235,000 cubic yards being the estimated amount required for both spillway and station.

Sailing of the "Ancon."

The sailing of the steamer *Ancon* has been set for Tuesday, June 3, at 3 p. m., from pier No. 11, Cristobal.

Swimming at Cristobal Docks.

The order prohibiting swimming from off the end of dock No. 11 at Cristobal has been revoked in view of the fact that those who engaged in the pastime have promised to provide lifeboat service at all times. As an additional precaution, the lifeboat will be equipped with four or five life rings, with

heaving lines attached. The Panama Railroad Company has been charged with the duty of seeing that these regulations are observed.

Nominations for Officers, I. O. P. K.

The regular bimonthly meeting of the Independent Order of Panamanian Kangaroos will be held at the Kangaroo Hall, Empire,

on Saturday evening, June 7, at 8 o'clock. There will be nominations of officers for the ensuing term, and other important business. Refreshments will be served. A large attendance is desired.

C. E. Wood,
Judge, I. O. P. K.

Gatun, C. Z., May 24, 1913.

LABOR FORCE AND QUARTERS IN APRIL.

The force report for April 30 shows the actual working force of the Canal Commission to be 32,825; of the Panama railroad, 6,319, and of the contractors, 5,048, a total effective working force of 44,192 men. While this shows a slight reduction in the number of men employed, as compared with March, the number actually at work continues to be greater than at any other period in the history of the Canal. The gold force on the Canal work, composed almost exclusively of white Americans, was 4,358, a reduction of 129, as compared with the previous month. A statement of the Canal force, by divisions, follows:

DEPARTMENT OR DIVISION.	SILVER EMPLOYES*											Total silver.	Total gold.	Grand total.	
	Artisans.					European laborers.		West Indian laborers.							
	Monthly	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.				10 cents.
Construction and Engineering.....	4,428	9	9	344	1,143	4,236	3,546	932	107	382	5,753	2 698	23,818	3,289	27,107
Civil Administration.....	151			2	4	23						20	200	339	539
Sanitation.....	652			3	3	4					42	310	1,016	348	1,364
Quartermaster's.....	889			319	297	42	33	2	34		82	786	2,529	177	2,706
Subsistence.....	850			2	1	1							869	52	921
Disbursements.....	7												7	25	32
Examination of Accounts.....	28												28	128	156
Total.....	7,005	9	9	670	1,448	4,306	3,579	934	141	382	5,877	4,107	28,467	4,358	32,825
Month previous....	6,782	10	12	546	1,582	4,350	3,512	840	150	357	5,906	†3,827	27,874	4,458	32,332

I. C. C. force, 32,697; Panama railroad force, 5,020; Panama railroad commissary force, 1,299; total 39,016.
*All wages specified are in gold. †Includes 273 at seven cents, and 20 at five cents. Includes 266 at seven cents and eight at five cents.

The force report of the Department of Construction and Engineering, including the employees of contractors, as of April 30, was, as follows:

DIVISION.	SILVER EMPLOYES*												Total silver.	Total gold.	Grand total.
	Artisans.					European laborers.		West Indian laborers.							
	Monthly	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.			
Chief Engineer.....	1,514	...	1	192	637	2,386	1,446	535	30	3	3,190	597	10,917	1,381	12,298
Mechanical Division.....	250	6	2	28	77	388	69	3	...	...	1,212	52	2,097	865	2,962
Atlantic Division.....	1,263	3	6	104	307	1,085	599	178	77	...	643	137	4,360	420	4,780
Central Division.....	1,101	...	...	20	122	377	1,432	216	77	379	708	1,912	6,444	623	70,67
Pacific Division.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
U. S. Steel Products Co.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	105	118	223
Chicago House Wrecking Co.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	4	17
McClintic-Marshall Co.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,275	533	4,808
Total.....	4,428	9	9	344	1,143	4,236	3,546	932	107	382	5,753	†2,929	28,211	3,944	32,155
Month previous.....	4,227	10	12	349	1,366	4,212	3,484	839	115	357	5,740	†2,794	28,667	4,092	32,759

*All wages specified are in gold. †Includes 229 at seven cents, and two at five cents. †Includes 240 at seven cents and two at five cents.

QUARTERS.

A report of Commission quarters occupied on April 30, follows:

PLACE.	Gold.			Europeans.			West Indians.		
	Men	Women	Children	Men	Women	Children	Men	Women	Children
Balboa.....	243	36	44	409			611		
Ancon.....	504	305	229	4			741		
Corozal.....	695	102	120	413			494*	5	5
Miraflores.....	22	2	3	465*	4	11	353*	6	4
Pedro Miguel.....	356	74	89	340	3	3	217	36	45
Paraiso.....	287	75	82	140	3	11	234	105	160
Culebra.....	351	156	158	470	47	85	380	113	169
Empire.....	534	318	295	393	53	77	508	141	223
Las Cascadas.....	196	110	121	29	17	29	223	157	128
Bas Obispo.....	83	57	36	132	23	37	145	52	75
Gorgona.....	663	174	232	70	4	9	268	78	142
Gatun.....	806	201	203	943	20	23	792	29	34
Cristobal.....	766	289	303	143			1,476*	230	353
Toro Point.....	50	15	18	84			339		
Porto Bello.....	66	30	33	130*			248	2	3
Totals.....	5,622	1,944	1,966	4,165	174	285	6,979	958	1,341

(1) Includes Sabanas police station, Taboga Island, Culebra Island, Palo Seco and Naos Island. (2) Includes 66 Panamanians. (3) Includes 18 East Indians. (4) Includes 70 Panamanians. (5) Includes Matachin. (6) Includes Colon Hospital. (7) Includes 56 East Indians, 84 Panamanians, and 12 U. S. citizens. (8) Includes 4 Asiatics. Gold force of contractors (included above), 41 families, 569 bachelors.

GROWTH OF COROZAL.

Additional Accommodations Made Necessary by Increased Population.

The erection at Corozal of the houses shipped from Gorgona has been expedited by the construction of a spur track from the Panama railroad, at the station, eastward beyond the Commission clubhouse and toward the high land on which the family quarters are being erected.

The recent growth of the village has made increased fire protection necessary. A 6-inch water main has been laid along the Corozal-Panama highway, from the station past the clubhouse; similar lines will pass along the two new streets being opened north of this road, and a four-inch main will be run to the fork of the two roads, south of the clubhouse.

The commissary store is being enlarged by a 10-foot addition on the east side of the main building, and half across each end. The Commission hotel is now the largest on the Isthmus, and tables have recently been placed on the front veranda, bringing the number in use to 56. An average of about 1,325 meals is served daily, which is the largest number ever served at any hotel during Canal construction; at lunch, about 320 meals are served in 35 minutes, between the passing of labor trains. The force of waiters employed by the steward numbers 51.

Fumigation of Vessels from Guayaquil.

Port authorities in Guayaquil, Ecuador, promulgated recently regulations under which vessels are required to anchor nearer the city, opposite its lower end. This renders such vessels liable to infection from infected mosquitoes. They must be fumigated and held to complete six days' quarantine after the fumigation. The officer of the United States Public Health Service stationed at Guayaquil has informed the Chief Quarantine Officer of the Canal Zone that he has not the equipment for fumigating the larger vessels; consequently the fumigation of ships bound for Balboa from Guayaquil has to be done after their arrival in Panama Bay. The completion of the quarantine period under these circumstances results in delay to the vessels, as the Commission quarantine service regards it as essential to maintain a strict quarantine against all infected ports.

Sale of the "Bolivar" Recalled.

The tug *Bolivar*, belonging to the Panama Railroad Company, has been withdrawn from sale and will be transferred to the Sixth Division, to become a part of the dredging fleet at Balboa. The transfer was determined by the necessity of retiring the tug *Cocoli* for several months for extensive repairs to its boilers. The *Bolivar* is in good condition. Its sale was authorized as a matter of economy, inasmuch as the Sixth Division was able to furnish tug service for the port at less cost than a separate service maintained by the railroad.

Examinations by Board of Local Inspectors.

The Board of Local Inspectors will conduct examinations at the Administration building, Ancon, on Wednesday, June 4, 1913, beginning promptly at 2 p. m., for persons desiring to secure the following classes of license: Pilots, masters, mates, marine engineers, chauffeurs and navigators of motor boats. All applicants for licenses must procure from the Executive Office, Ancon,

forms for application and information respecting the filling out of same, not later than the day previous to the examination. In addition, applicants for chauffeur's licenses must provide themselves with automobiles.

New General Superintendent, P. R. R.

John D. Patterson, the new General Superintendent of the Panama railroad, began railway service in 1876 on an engine on the Southern Railway, being promoted later to engineer. He went into the train service in charge of a passenger train in 1880. Between 1880 and 1905, he served as conductor and trainmaster and had charge of terminals on the Southern Railway, acting as trainmaster, yardmaster, and terminal yardmaster. On May 14, 1905, he was made superintendent of terminals in the new passenger station at Atlanta, Ga., and on March 30, 1907, was made general superintendent of the old Mobile, Jackson, and Kansas City railroad. On October 8 of the same year, he was recalled to Atlanta to take the position of superintendent of joint terminals, which he held till he resigned to come to the Isthmus on May 5, 1913.

Canal Zone Postal Savings Bank Transactions

A statement of the postal savings bank transactions at Canal Zone postoffices for the month of April, follows:

NAME OF OFFICE.	Postal savings certificates issued.	Postal savings certificates paid.
Ancon.....	\$17,055.00	\$12,366.00
Balboa.....	11,084.00	7,873.00
Bas Obispo.....	1,610.00	2,080.00
Corozal.....	20,445.00	14,206.00
Cristobal.....	12,618.00	13,978.00
Culebra.....	14,399.00	11,962.00
Empire.....	10,724.00	7,225.00
Gatun.....	18,957.00	22,187.00
Gorgona.....	16,517.00	16,916.00
Las Cascadas.....	15,735.00	12,912.00
Matachin.....	1,158.00	1,303.00
Miraflores.....	5,816.00	6,541.00
Paraiso.....	9,082.00	8,253.00
Pedro Miguel.....	13,000.00	12,960.00
Cristobal, Sta. "A".....	660.00	720.00
Cristobal, Sta. "B".....	1,582.00	999.00
Total.....	\$170,442.00	\$152,481.00
Deposits on hand April 1, 1913.....	\$622,084.00	
Amount deposited in April.....	170,442.00	
Amount withdrawn in April.....		\$152,481.00
Balance on hand May 4, 1913.....		640,045.00
	\$792,526.00	\$792,526.00

Fourth of July Arrangements.

The members of the executive committee for the 1913 Fourth of July celebration at Cristobal will be, as follows:

Commissioner M. H. Thatcher, chairman; Capt. F. O. Whitlock, chairman, entertainment committee; Mr. E. J. Williams, chairman, finance committee; Capt. R. E. Wood, chairman, fireworks committee; Mr. W. C. Haskins, chairman, publicity and printing committee; Mr. J. D. Patterson, chairman, transportation committee; Dr. M. E. Connor, chairman, music and dance committee.

A meeting of the committee was held on Saturday afternoon, May 23, at the office of its chairman. Upon motion, it was decided to use blanks similar to those of last year in making collections of contributions to the celebration fund, and in issuing transportation and lunch tickets. Allotments of funds were made to the several committees to the same amount in the aggregate as last year. The allotment to the fireworks committee is \$1,550, of which amount \$1,000 will be used

for the display at Cristobal; \$200 at Ancon; \$200 at the joint Empire-Culebra display, the remainder to be distributed among Porto Bello, Palo Seco, and Taboga.

The chairman of the entertainment committee was authorized to act as purchasing officer for all purchases outside the Canal Commission or Panama railroad. The chairman of the dance committee was of the opinion that the new Pier 16 at Cristobal could be made ready for the evening dance, and could also be used to house the people in case of rain, and for serving refreshments. In case the pier is not available, dock No. 11 will be used. Two bands will be engaged, those of the Tenth Infantry, and United States Marine Corps.

Upon motion, it was voted to ask Colonel Goethals to deliver the Fourth of July address.

PERSONAL.

Capt. R. E. Wood, formerly Assistant Chief Quartermaster of the Isthmian Canal Commission, returned to the Isthmus on the *Panama* which arrived at Cristobal on Tuesday, May 27. Effective that date, he has been appointed Chief Quartermaster of the Isthmian Canal Commission, vice Brigadier-General C. A. Devol, resigned.

Mr. William L. Phillips has been appointed to the position of landscape architect in charge of the new townsite work at Balboa, and is expected on the Isthmus about July 1.

Mr. M. E. Gilmore, Superintendent of Public Works, has resigned, effective June 1, on which date he will become manager of the Panama Land and Development Company in charge of the improvements to the Bella Vista estate, in Las Sabanas, east of Panama city.

Dr. Malcolm Watson, at one time chief medical officer of the Estates Hospital Association and senior district surgeon in the Federated Malay States medical service, is visiting the Isthmus. Dr. Watson has been connected with sanitary work in the Federated Malay States for the past 13 years, and one of the objects of his visit is to inspect the work as it is being conducted here. On Wednesday afternoon, May 28, he gave an informal talk, descriptive of his labors in the East, at the gold mess hall at Ancon Hospital.

High School Notes.

The Canal Zone High School commencement exercises will be held on Saturday evening, June 27, in the Commission clubhouse at Empire, instead of at Gatun as announced in the last issue of *THE CANAL RECORD*.

College entrance examinations will be conducted at Ancon school house from June 16 to June 21, inclusive. Any high school graduate, including the seniors of the class of 1913, is eligible to enter the examinations. Credit is given on fourth year work for examinations passed on first, second, and third year courses. These examinations admit to any college or university in the United States.

Fatal Accidents.

George Atchison, Jamaican, check No. 44899, fell from a trestle on the east side of the Canal at Empire, on Monday, May 26, breaking his neck.

Samuel Thomas, a native of Montserrat, check No. 465185, employed on mud scow No. 14 at Balboa, was fatally injured on Monday, May 26, while attempting to loosen some steering gear on the vessel in which he became caught.

FLOATING CRANES FOR CANAL.

Permanent Equipment to Handle Parts and Cargo in Maintenance and Operation.

The Secretary of War has authorized award of contract for two floating cranes of the revolving type of 250 gross tons capacity each, to the Deutsche Maschinenfabrik A. G., of Duisburg, Germany, proposals for these cranes having been opened in the Washington office of the Commission on January 13, 1913. There were four bidders, one American, one English, one Dutch, and one German.

contractor. In general the execution of the contract will probably be, as follows:

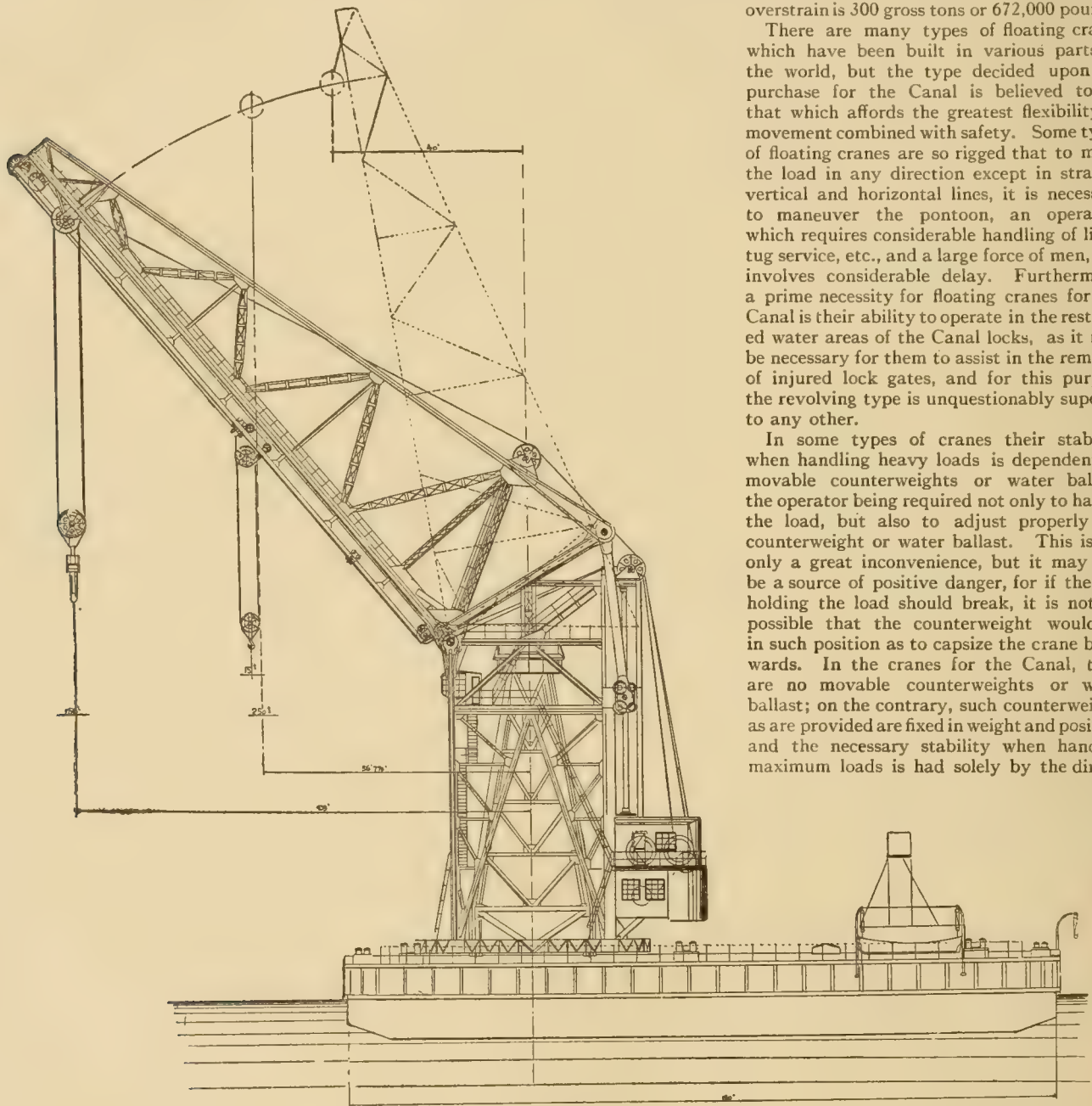
The pontoons will be designed and built at the German shipyard, simultaneously with the design and fabrication of the superstructure and operating machinery at the contractor's works in Duisburg. The pontoons, after being fitted with a part of the machinery located below deck, will be towed to the Isthmus, and at the same time the superstructure will be shipped to the Isthmus in a knocked-down condition, final erection of the superstructure and placement of

remainder of the superstructure. A reference to the sketch accompanying this description will give an idea of the work involved.

After final erection and adjustment, each crane will be subjected to a comprehensive series of tests, during which it will be required to demonstrate its ability to handle all the specified loads at the specified reaches and to perform all of the required motions. The test loads will be 20 per cent in excess of the rated loads for the "main hoist," and $33\frac{1}{3}$ per cent in excess of the rated capacity of the "auxiliary hoist". This means that the maximum weight which must be handled without overstrain is 300 gross tons or 672,000 pounds.

There are many types of floating cranes which have been built in various parts of the world, but the type decided upon for purchase for the Canal is believed to be that which affords the greatest flexibility of movement combined with safety. Some types of floating cranes are so rigged that to move the load in any direction except in straight vertical and horizontal lines, it is necessary to maneuver the pontoon, an operation which requires considerable handling of lines, tug service, etc., and a large force of men, and involves considerable delay. Furthermore, a prime necessity for floating cranes for the Canal is their ability to operate in the restricted water areas of the Canal locks, as it may be necessary for them to assist in the removal of injured lock gates, and for this purpose the revolving type is unquestionably superior to any other.

In some types of cranes their stability when handling heavy loads is dependent on movable counterweights or water ballast, the operator being required not only to handle the load, but also to adjust properly the counterweight or water ballast. This is not only a great inconvenience, but it may also be a source of positive danger, for if the line holding the load should break, it is not impossible that the counterweight would be in such position as to capsize the crane backwards. In the cranes for the Canal, there are no movable counterweights or water ballast; on the contrary, such counterweights as are provided are fixed in weight and position, and the necessary stability when handling maximum loads is had solely by the dimen-



270-TON FLOATING CRANE—SIDE ELEVATION.

The proposal of the German firm was so much lower in price than any other, and the experience, facilities, and reputation of this firm were so excellent, that it was unquestionably the best of those received. The time of delivery for the two cranes is 580 days. The cranes will be constructed in Germany and a force is now being organized to take charge of the inspection at the works of the

machinery parts being made after arrival on the Isthmus. The cranes are so high, and the weights of the superstructure are so great, that the erection of the jib or arm which carries the loads will probably be effected by means of one of the Canal lock chambers, the water level in the lock being lowered sufficiently to permit the jib, which will be assembled on the lock wall, to be fitted to the

sions of the pontoon, considered in connection with the deadweights and loads to be carried.

The cranes for which contract has been awarded will each consist essentially of a steel pontoon 150 feet long, 88 feet wide, and of a depth of 15 feet 9 inches at the sides, and 16 feet 8 inches at the center. The pontoons will be strongly framed with beams and girders,

and will be subdivided into watertight compartments of such dimensions that any two exterior compartments can be flooded and the crane remain stable with full load at full reach in any position, and with wind blowing at the rate of ten pounds per square foot from the most unfavorable direction. The pontoons will contain a power generating installation, consisting of a Scotch marine steam boiler, supplying steam to marine type engines driving the main and auxiliary electrical and generating units. These units will furnish direct current at 220 volts to motors located on the superstructure, which latter will drive the wire ropes actuating the blocks to which the loads to be handled will be attached. The cranes will not be self-propelling, but the pontoons are fitted with towing bitts etc., so that they can be handled by tugs. Each pontoon is fitted with four steam capstans, one near each corner, whereby the cranes can be maneuvered to any desired position. To safeguard the cranes in possible heavy weather or other circumstances, each is provided with two 3,000-pound anchors and the necessary chain cable, two steam anchor winches being provided for each crane to handle the anchors.

An area, 20 feet by 60 feet of the deck of each pontoon is made especially strong, being capable of carrying a superimposed load of 2,000 pounds per square foot, this area being intended for the reception of loads up to a total of 300 gross tons. The cranes can therefore carry very heavy and bulky loads on their decks when it is necessary to transport them anywhere on the Canal, thus rendering unnecessary the use of barges, etc., for this purpose.

The pontoon supports the fixed and revolving superstructure at a point 39 feet distant from one end and midway of the width of the pontoon. Reference to the accompanying sketch will give an idea of this superstructure. In general it consists of three parts: first, the fixed superstructure, or mast, consisting of a four-sided truncated pyramid firmly secured to the pontoon framing; second, the revolving "bell" which is a four-sided, steel framed structure which is supported by a combination collar and roller bearing on top of the mast; and third, the arm or jib which is supported on the bell by two hinge pins, and is capable of motion about these pins, the motion being imparted to it by means of two links connecting it to two crossheads situated at the rear of the bell and actuated by two vertical screw spindles driven from the machinery house. The bell supports the machinery house which is situated, as shown in the sketch, at the rear of the bell, and a short distance above its bottom. This machinery house contains fixed counterweights, as well as the motors, gears, drums, etc., for operating the main and auxiliary hoists. The bell also supports the driver's cab at a point just below the hinge pins of the jib, from which the operator commands an unobstructed view of the entire field of work.

The bell terminates at its bottom on a circular steel girder carrying rollers which press against a roller path secured to the mast. The motors for revolving the bell and jib around the mast are fixed at the bottom of the mast and drive gears engaging a circular rack on the annular girder forming the base of the bell. All motions are in the complete control of one man whose station is in the driver's cab. In addition to the driver there will be required a machinist in the machinery house on the bell, another machinist in the generating plant in

the pontoon, and a fireman for the boiler; thus, with the exception of the deck force for handling lines, etc., but four men are necessary for the operation of each crane.

From the foregoing description of the superstructure, it will be seen that the entire revolving weight rests on the top of the mast and that the jib is prevented from overturning by the resistance of the collar bearing at the top of the mast and the rollers at the bottom of the bell. The clearances are such that no part of the revolving superstructure, except the jib, overhangs the pontoon in any position, thus rendering it possible to operate the crane in restricted spaces. The heights of the superstructure are such that unencumbered passage around it is provided in all positions.

The jib is provided with two hoists designated the "main hoist" and "auxiliary hoist," respectively. The main hoist is fixed at the point of the jib and will consist of two equal blocks, each of a rated capacity of 125 gross tons. These two blocks can be linked together by means of an "equalizer bar," whereby they may be made to form substantially one hoist of 250-ton capacity. Each block of the main hoist will be suspended in ten parts of two-inch wire rope.

The auxiliary hoist will have a rated capacity of 15 gross tons, and will consist of a two-part block swung from a traveling trolley running on a runway secured to the lower side of the jib in such manner that the auxiliary hoist can be operated at any point of this runway at any position of the jib.

The main hoist can handle its rated loads at any point in a full circumference of 360 degrees with the mast as a center. It can revolve completely under maximum loads and can in addition be luffed in or out by means of the above-mentioned links and screw spindles. The main hoist will have the following capacities at the reaches stated for each; by "reach" is meant the horizontal distance from face of pontoon fender to center of block:

	100 tons	150 tons	250 tons
Loaded reach over end....	80.1 ft.	59.0 ft.	21.0 ft.
Loaded reach over side....	81.6 ft.	62.4 ft.	22.3 ft.

From any of these reaches the main load can be luffed in sufficiently far to enable the crane to deposit such load on its own deck.

The time of hoisting main loads is as follows:

Tons	Per minute
250.....	3 ft. 6 in
125.....	7 ft.
62.5.....	14 ft.

The unloaded blocks are raised or lowered at not less than 20 feet per minute. The crane can make one complete revolution in from 5 to 8 minutes, depending on the load and wind, the lower figure being for the most favorable condition without wind. The jib loaded with 100 tons can be luffed in from its maximum to minimum reach in not more than 17 minutes, and luffed out in not more than 13 minutes. Without load the jib can be fully luffed in from maximum to minimum reach in not more than 10 minutes and luffed out in not more than 8 minutes.

The speed of hoisting the fully loaded auxiliary block will be not less than 40 feet per minute, and the unloaded auxiliary block can be raised or lowered at not less than 80 feet per minute. The speed of trolleying the auxiliary hoist along its runway will be from 40 to 80 feet per minute, depending upon the degree of inclination of the jib.

Each crane will be safely stable in a wind

exerting a pressure of 40 pounds per square foot, even with full 300-ton deck load on the pontoon. Of course the operation of the cranes would not be attempted in such a gale. The pontoon will have a freeboard of not less than 3½ feet when handling maximum capacity loads in any position without deck load; if the deck load be present this free load will be reduced to not less than 2 feet. The maximum longitudinal inclination of the pontoon will not exceed 2½ degrees, and the maximum transverse inclination will not be greater than 5 degrees.

Each crane will be provided with ladders, stairs, gangways, etc., for convenient communication, inspection, and repair, will be fully equipped with all necessary signals and means of communication, and will be electric lighted throughout.

Congressional Visitors.

Fourteen members of the House of Representatives arrived on the Isthmus, on the *Ancon*, on Sunday, May 25, on a visit of inspection to the Canal. The party is composed of the following: L. B. Stringer, and Mrs. Stringer; Frank T. O'Hair, and Mrs. O'Hair; Louis Fitz Henry, Illinois; J. W. Alexander, and Mrs. Alexander, son, and two daughters; Thomas L. Rubey, and Mrs. Rubey; C. C. Dickinson, and Mrs. Dickinson; Joseph J. Russell, Missouri; John I. Nolan, and Mrs. Nolan, California; H. D. Clayton, and Mrs. Clayton, Alabama; James F. Byrnes, and Mrs. Byrnes; A. F. Lever, and Mrs. Lever, South Carolina; Rufus Hardy, Sam Rayburn, Jack Beall, Texas. The party will return to the United States on the *Ancon*, which is scheduled to sail from Cristobal on Tuesday, June 3.

Red Cross Finances.

A statement of the finances of the Canal Zone Chapter, American National Red Cross, for the month of April, 1913, follows:

RECEIPTS.	
April 1, On hand.....	\$2,115.39
1, Membership dues.....	3.00
2, Membership dues.....	1.00
7, Donation, account Jamaican relief fund....	.50
24, Membership dues.....	1.00
28, Donation by Empire Lodge, Knights of Pythias, for relief of flood sufferers in the United States.....	50.00
30, Gross receipts of entertainment held at National Theatre, Panama.....	633.00
	<hr/> \$2,803.89
DISBURSEMENTS.	
April 1, Relief of American woman at Panama....	\$ 50.00
3, Printing envelopes.....	2.80
4, Relief of wife of Zone prisoner, Culebra.....	5.00
23, Relief of wife of Zone prisoner, Culebra.....	5.00
23, Relief of American, ill at Colon, and deported to San Francisco.....	25.00
28, Forwarded to National Red Cross, for relief of flood sufferers in the United States.....	50.00
30, Expenses of entertainment at the National Theatre, Panama.....	113.00
	<hr/> \$270.80
April 30, Balance on hand.....	\$2,533.09
JOHN L. PHILLIPS, Treasurer.	
Approved: EDW. SCHILDHAUER, Chairman.	

Gangs Nos. 1 and 4 of the Lighthouse Subdivision, which are in camp in the Gatun Lake region, will, at their request, work on Friday, May 30, Decoration Day, and have as a holiday the following day, Saturday.

ACTIVITIES OF ZONE WOMEN.

Review of Woman's Movement Initiated by the Government.

The Canal Zone Federation of Women's Clubs, which closed six years of activity on April 19, was composed of nine clubs that had been formed in the various villages of the Canal builders, in September and October, 1907. These clubs were unique in the history of the woman movement; they were the only clubs of women ever organized in any country by government authority. Their explicit purpose was to provide recreation and social intercourse for the wives and daughters of American employes, just as the Commission club-houses were established as centers of recreation for the men of the force. When it became obvious that an outside agency was needed to start a social movement among the women, Secretary Taft authorized the employment by the Canal Commission of Miss Helen Varick Boswell to undertake the task. Miss Boswell arrived on the Isthmus early in September, and at once set about traveling from village to village for the purpose of meeting the women in social gatherings. Her mission was successful, the club idea was received with enthusiasm, and when she left for New York, on October 17, she had organized clubs in the larger centers. Without a doubt, such clubs would have been organized in time by the more liberally inclined women, but it would have taken effort and time to put on its feet a movement, which, with the powerful aid of the government, was started in less than five weeks.

At the time of the organization of these clubs, there was an estimated population of American employes and their families of about 8,500, representing 15 or 20 classes of industry. The families were quartered in the scattered villages, 19 in number, along the line of the Panama railroad, and in few of these villages were there enough members of any one industrial class to form a basis for the development of social life. Indeed, there was no social life among the women. The churches had scarcely begun any regular activity, there were no libraries, no lectures, no theatres, no moving picture shows, the National Theatre in Panama had not been built, and the only recreation for the women was an occasional dance. The first public entertainment in the Canal Zone, notice of which was published in *THE CANAL RECORD* for November 13, 1907, was a minstrel performance, given in the Culebra clubhouse. Previous to that time, there had been occasional entertainments in Panama, one of the very first being held in the Sarah Bernhardt theatre, now destroyed. Minstrel performances were given by local companies from time to time, but in these, naturally, the women had no part.

The wives who had accompanied their husbands to the Canal Zone, preferring this exile to separation from them, led a dreary life in those days. Comfortable houses were furnished, health conditions were constantly improving, and the Commission did its best to keep the employes satisfied and contented, but the women were cut off from their natural environment; they were separated from relatives, from neighbors and friends; housekeeping under the new conditions was difficult, and problems hitherto unknown presented themselves daily. More than all, there was little or no "neighboring" among the women. In the minds of a few progress-

ive women the club idea began to stir, but no one felt the courage to take the first steps toward organization. This was the situation in 1907, when, as related above, the government found efficient means of relieving it.

While the nine clubs formed by Miss Boswell gave rise to a local social life of importance, the main purpose of the federation was to form a tie between the club women in the Canal Zone and those of the United States. This was accomplished by affiliation with the General Federation of Women's Clubs, an international organization of more than 1,000,000 members, with affiliated clubs throughout the United States, and in Great Britain, Canada, the Philippines, Western Australia, Sweden, and China. Membership in an organization composed of so large a body of kinswomen and foreign club women, formed the crux of club life in the Canal Zone; it gave to the women at once a sense of dignity and power in their work, and helped them to a broad outlook on the affairs of women throughout the world. The federation also drew visitors of national importance to its meetings. The program meetings, held in January of each year, included some of the most notable gatherings that have been held in the Canal Zone during the American occupation. Among the special speakers have been the Honorable William H. Taft, when president-elect of the United States, Mrs. Philip North Moore, then president of the General Federation, who came at the invitation of the Canal Zone Federation in 1909, the Honorable William Jennings Bryan, the Ven. Archdeacon Henry B. Bryan, Miss Helen Varick Boswell, Dr. J. Cueva Garcia, minister to the Republic of Panama from Ecuador, and Dr. Edward T. Devine of Columbia University, New York.

When the federation was organized, on October 12, 1907, in what was known as the "president's suite" in the Hotel Tivoli, there were delegates present from eight clubs, representing about 250 women (the ninth club was organized and admitted to the federation later in the year). Before April, 1908, the membership of the clubs had doubled. Conventions of the federation were held in April, October, and January, the annual meeting being in January. The executive board, which was composed of the officers of the federation, the chairmen of committees, and the presidents of the clubs, held three regular meetings during the year. By this means the club women were able to keep in touch with all the work of the federation, for the representation was broad, including members from each of the clubs.

In 1909, following the visit of Mrs. Moore, the federation received a gift of books for a juvenile library, from club women in Texas. This prompted the local clubs, which had already started libraries, to combine their books with those of the federation, and a library extension committee was formed. After four years of circulation in the Canal Zone schools, the library has been turned over to the Isthmian Sunday School Association for use among the American children of the Sunday schools. In the same year, —1909— the Eighth District Art Committee of St. Louis sent a collection of pictures for art extension work. The collection includes 37 large pictures, reproductions of old masters, handsomely mounted and suitable for exhibition purposes, note books and examples of

the different schools of art, including sculpture and architecture, and five text books on art. The entire collection, after circulation through the Canal Zone and exhibition in the public schools, and privately, has been presented to the Ancon Study Club for its own use and for future art extension work in the Canal Zone.

The bureau of information of the General Federation has supplied materials for the preparation of papers on various subjects, upon request of the local clubs. In 1908, a botany committee was formed to work in connection with the Field Columbian Museum of Chicago in procuring specimens of the flora of the Isthmus for classification.

The officers of the federation have been in constant correspondence with the officers of the General Federation, and, from time to time, have met the representatives of the General Federation visiting the Canal Zone, in conference. The chairman of the conservation committee was a welcome visitor in December, and later, the treasurer of the General Federation, a recently appointed sponsor to the Canal Zone organization, spent a short time in Panama.

Local activities of the federation have not been less interesting than those in connection with the General Federation. A cook book was compiled in 1910; civic work has been constantly in the minds of the women and, year by year, they have had the satisfaction of witnessing the putting into practice of some improvement in the general order of things which they had first seen or pointed out. The education department has always worked in cooperation with the division of schools and has been instrumental in promoting good feeling between parents and teachers. The federation annually sent a Christmas box to the patients in the government asylum for lepers at Palo Seco. It remained, however, for the annual meeting in January, 1912, to authorize the beginning of an important philanthropic work in the education of a native blind boy, the object being twofold; first, to fit the unfortunate youth for a life of self-support; and second, to enable him to demonstrate to the people of Panama that the blind are not necessarily helpless, and, therefore, paupers. With this work well in progress, and under the direction of a committee formed of the executive board of the federation, the organization closed, as has been stated, on April 19, 1913.

Although it was considered expedient to close the federation at that time, the work of women's clubs in the Canal Zone is by no means at an end. There are still general clubs, all holding their officers over until the opening of the club year in October, and unwilling to disband, but rather inclining to affiliate separately with the General Federation, one study club, already affiliated, and 23 other organizations of varying character, the membership of the entire body of organizations of women being reduced only by about 50 in the closing of the federation.

The Secretary of Foreign Affairs of Panama has submitted to the head of the Department of Civil Administration a statement of expenditures made for the street cleaning service in the city of Panama, from January, 1909, to May, 1913. In 1909, the expenditures amounted to \$39,909.03; in 1910, to \$50,009.40; 1911, to \$52,262.04; 1912, to \$72,152.30; first four months of 1913, to \$19,863.17½.

OFFICIAL CIRCULARS.

Appointment of Chief Quartermaster.

CULEBRA, C. Z., May 27, 1913.

CIRCULAR No. 487:

Effective this date, Capt. R. E. Wood, U. S. A., is hereby appointed Chief Quartermaster in charge of the Quartermaster's Department of the Isthmian Canal Commission, vice Brig.-Gen. C. A. Devol, resigned.

GEO. W. GOETHALS.

Chairman and Chief Engineer.

Mechanical Committee Abolished.

CULEBRA, C. Z., May 20, 1913.

CIRCULAR No. 383-B:

The mechanical committee, appointed by circular No. 383, dated April 18, 1911, is hereby abolished.

GEO. W. GOETHALS.

Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Permits to Jump On or Off Trains.

CULEBRA, C. Z., May 20, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

Referring to circular No. 379-A, prohibiting employees from jumping on and off locomotives, cars, or trains while in motion, except with permission in writing from the head of the department or division:

Please furnish the Head of the Department of Civil Administration the names of all employees to whom this permission has been granted or may be granted in the future.

GEO. W. GOETHALS, Chairman.

Claims of Employees Before Joint Land Commission.

CULEBRA, C. Z., May 20, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

Employees who have claims to present to the Joint Land Commission may be excused from their duties for this purpose, but will be required to submit on their return to duty a certificate, signed by the Joint Land Commission, or its secretary, that they have been before the commission in connection with the presentation of their claims on the date or dates when they were absent, and they will not be allowed pay for that time.

GEO. W. GOETHALS, Chairman.

Daily Report of Cars.

CULEBRA, C. Z., May 21, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

Until further advised, send daily report to this office, with a copy to the General Superintendent of the Panama railroad, showing the numbers of all classes of cars which had been under load in your custody for more than 24 hours at the close of business the preceding day, together with a statement of the reasons for delay in unloading for each car. This report must be in this office by one of the midday trains, without fail.

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Estimates for Fiscal Year Ending June 30, 1915.

CULEBRA, C. Z., May 24, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

Please prepare, and submit to this office not later than June 1, 1913, preliminary estimates for appropriations for the fiscal year ending June 30, 1915. These estimates should be made in total only, under each appropriation head, and do not refer to the detailed estimate which will be submitted at a later date. It is expected, however, that these preliminary estimates will agree substantially with the detailed estimates. It will be assumed that the appropriations for the fiscal year 1914 will be sufficient for that period and that no deficiency or surplus will be carried forward to the fiscal year 1915.

I enclose blank on which I desire you to submit these estimates, one copy to be retained for your file.

While it is desired that the information called for by the blank be furnished, it will not be necessary that they be worked up in detail at the present time. All that is required is the total requirements for your work for the fiscal year 1915, giving the assumption on which they are based. Your estimates should include work done for you by the Mechanical Division.

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Telephone Pay Stations at Hotels Tivoli and Washington.

PANAMA RAILROAD COMPANY,

OFFICE OF PRESIDENT,

CULEBRA, C. Z., May 23, 1913.

To ALL CONCERNED:

Effective June 1, 1913, the telephones in the Hotels Tivoli and Washington will be placed on a strictly pay station basis, and, in order that no inconvenience may

be caused to those entitled to the privilege, telephone franks will be issued to the heads of divisions and departments and to others to whom it may be necessary to use telephones at the above points on official business.

Holders of telephone franks will be entitled to use pay station telephones in the railroad stations at Colon and Panama, and also the telephones of the Isthmian Telephone Company's, and Panama Telephone Company's systems.

Party holding telephone frank wishing to use telephone at any of the above points, will give frank number to telephone operator, who will enter same on toll ticket to show disposition of charge.

Franks will not be necessary at other places than above mentioned.

Telephone franks may be secured upon written application to the General Superintendent, Panama Railroad Company, Colon.

GEO. W. GOETHALS, President.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, May 24, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela	Gamboá.	Gatun Lake.
Sun., May 18.....	127.4	93.6	49.6	49.5
Mon., May 19.....	126.4	92.9	49.5	49.3
Tues., May 20.....	127.0	93.2	49.1	49.0
Wed., May 21.....	127.8	93.8	49.1	48.8
Thurs., May 22.....	139.6	101.8	53.0	48.8
Fri., May 23.....	131.7	98.4	53.6	49.0
Sat., May 24.....	128.3	94.1	49.3	49.0
Height of low water to nearest foot.....	125.0	91.0	44.0	

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending June 7, 1913 (75th meridian time):

DATE.	High		Low	
	A.M.	A.M.	P.M.	P.M.
June 1.....	1.00	7.03	1.10	7.36
June 2.....	1.44	7.47	1.52	8.19
June 3.....	2.25	8.30	2.34	9.00
June 4.....	3.0	9.13	3.15	9.42
June 5.....	3.48	9.58	3.58	10.24
June 6.....	4.30	10.42	4.41	11.07
June 7.....	5.15	11.28	5.27	11.53

Misdirected Letters.

ANCON, C. Z., May 28, 1913.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Acker, Percy	Hinds, E. Garfield
Arnold, John H.	Holmelin, Gerst
Barnum, C. D.	Loewe, Chas.
Berry, Miss Mattie	Malphosin, John
Booth, R. K.	McDaid, Jack
Box, Ernest	Moreland, C.
Bravo, Luis A.	Panton, Wm.
Brown, Miss M. E.	Ragsdale, Mrs. H. C.
Brown, Washington (2)	Riffenberg, W.
Camp, D. D.	Russell, S. M.
Carter, Mrs. John P.	Sammus, Hubert I.
Clarity, Mrs. P. J.	Samuels, W.
Conklin, Chas. T.	Sensenbach, W. F. R.
Crosley, C. G.	Sherry, E.
Ford, W. H.	Skinner, Miss Dolly
Gallagher, Thomas	Skinner, Frank
Galt, Harry	Sporer, G. D.
George, Alexandre	Stauffer, Titus L.
Gibbs, Charles	Thweatt, Robert
Gibson, O. P.	Tull, Capt. Richard E.
Heimer, Mrs. F. R.	Vickery, W. J.

LOST—On May 22, between House 114 and engine house, Pedro Miguel, a black leather bill fold containing one \$10 bill and several receipts. Finder kindly return to H. W. Swanson, engine house, Pedro Miguel, and receive reward.

LOST—Between Third street, Colon, and Naos Island breakwater, a black seal combined pass and card book, with name of owner stamped in gold on the inside of front flap; book contains Panama railroad annual passes for the years 1911, 1912, and 1913; Y. M. C. A., and Train Dispatchers' Association cards, 1912-1913; numerous Masonic lodge receipts, etc. Liberal reward, if returned to dispatcher's office, Colon.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule for moving picture entertainments for the week June 2 to 7 is, as follows: Monday, Corozal; Tuesday, Culebra; Wednesday, Gatun; Thursday, Gorgona; Friday, Empire; Saturday, Cristobal; Friday, Porto Bello.

On account of Corozal's withdrawal from the indoor baseball league, a new schedule will be arranged.

COROZAL.

The Corozal American League duckpin team lost two out of three games to the Empire team here on Saturday night, May 24.

A "smoker" was given to the members of the Y. M. C. A. on Friday night, May 23, with the following program: Filipino string quartet; clog dancing, O'Tool, 10th Infantry; yodeling solo, R. King, Corozal; Filipino string quartet; reading, E. J. Rall; blackface comedy act, Furmeister and Morrison; Gorgona; bag-punching exhibition, R. Connors, Paraiso; banjo solo, Charles Ray, Paraiso; song and dance act, R. F. J. Cogan, Gorgona; wrestling matches, L. C. Wright vs. Hugh Connors, and J. Quinn vs. Eddie Andrews.

The Mary Lyon concert company will make its first appearance at the Corozal clubhouse on Wednesday, May 28.

EMPIRE.

On Sunday evening, May 25, Dr. Poole of Philadelphia gave an interesting talk on the Chinese revolution and the humor of the Chinese written language. Two hundred and fifty people attended.

The Gorgona shop duckpin bowling team, composed of King and Sims of Gorgona, and Gustaveson, Rodeghiero and Lowande of Empire, which challenged any duckpin team on the Isthmus, was defeated by the Empire team on Saturday, May 25, Empire winning two out of three games.

Empire has invited all the Isthmian bowling men to enter a duckpin tournament to be rolled on the Empire alleys, on May 30.

Entries have been called for the June handicap pool tournament, which will start the first week in June.

GORGONA.

The Mary Lyon company will be at the Gorgona clubhouse on May 29; admission, members free; non-members 50 cents; children 25 cents.

The gymnasium classes meet every Tuesday and Friday evening.

The Empire indoor baseball team will play at Gorgona on May 30. Every one is invited to attend; admission free.

The regular debating meeting was held Friday evening, when 50 people enjoyed the discussion, whether women shall have the right to vote. The affirmative won.

Eighty people attended the entertainment given on Sunday evening, when Miss Anais Cervera rendered several piano selections, and Mr. F. A. Gause, the superintendent of schools, delivered an address on Lincoln.

GATUN.

Gatun defeated Cristobal Saturday night in an interesting game of baseball, the score being, Gatun 37, Cristobal 25. In the absence of Drayton Thompson, who is now on vacation, George Duer acted as captain. Thomas Charnley was the umpire.

The high scores for duckpins for the week were: Wells 102; Barte 102, 100, 102; Harper 101, 113, 108, 112; Clarity 112, 113, 106; Conley 104, 111, 101, 102; Gray 102, 101; Dumville 103, 102; Carkeet 113; Gamble 102; Hodges 100; Grover 108; and Wurster 105, 116.

The high school dramatic club will stage the play, "She Stoops to Conquer," at the Gatun clubhouse on Friday night, June 13. The club is being drilled by Mr. C. C. Carr, and costumes have been ordered from the United States. The local players will come to the clubhouse on the same basis as entertainers from the United States, and the admission will be the same; 50 cents for nonmembers, members free.

The Mary E. Lyon concert company is booked for Gatun on June 3.

The chess team will go to Corozal on Saturday, May 31, to try conclusions with the Corozal team. Gatun will be strengthened by Mr. W. J. Shutes, one of the best players on the Isthmus.

CRISTOBAL.

On Friday night, May 30, the Mary Lyon concert company will give an entertainment. All seats will be reserved.

The "ragtime" duck and tenpin tournament on the local alleys will be started during the first week in June. New covers are being placed on the billiard and pool tables.

The indoor baseball team will go to Gorgona to play the next game.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning May 28, 1913:

FRESH MEATS.		Price
Mutton—Stewing, per pound.....	6	
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9	
Entire forequarter (not trimmed, 10 pounds and over), per pound.....	8	
Leg (8 to 10 pounds), per pound.....	17	
Cutlets, per pound.....	18	
Short cut chops, per pound.....	20	
Lamb—Stewing, per pound.....	6	
Entire forequarter, neck trimmed off, per pound.....	9	
Legs (5 to 8 pounds), per pound.....	20	
Chops, per pound.....	24	
Cutlets, per pound.....	24	
Veal—Stewing, per pound.....	10	
Shoulder, for roasting (not under 4 pounds), per pound.....	12½	
Chops, shoulder, per pound.....	17	
Chops, per pound.....	26	
Loin for roasting, per pound.....	26	
Cutlets, per pound.....	30	
Pork—Loin chops or roast, per pound.....	17	
Pigs Head, about 6½ lbs., per pound.....	10	
13 lbs., per pound.....	10	
Pigs Backbone, per pound.....	15	
Beef—Suet, per pound.....	2	
Soup, per pound.....	5	
Stew, per pound.....	8	
Plate, per pound.....	9	
Corned, No. 1, per pound.....	14	
Corned, No. 2, per pound.....	12	
Chuck, roast, 3 lbs. and over, per pound.....	12	
Rib roast, second cut (not under 3½ pounds), per pound.....	16	
Rib roast, first cut (not under 3 pounds) per pound.....	18	
Sirloin roast, per pound.....	19	
Rump roast, per pound.....	19	
Porterhouse roast, per pound.....	20	
Steak, Chuck, per pound.....	12½	
Round, per pound.....	13	
Rib, per pound.....	18	
Sirloin, per pound.....	19	
Rump, per pound.....	19	
Porterhouse (not less than 1½ pounds), per pound.....	20	
Tenderloin (Western) per pound.....	30	
MISCELLANEOUS.		
Livers—Beef, per pound.....	11	
Calf, each.....	60	
Half, each.....	30	
Steak, Hamburger, pk.....	13	
Sausage—Bologna, per pound.....	13	
Frankfurter, per pound.....	13	
Lieberwurst, per pound.....	13	
Devonshire Farm, per pound.....	20	
Pork sausage meat, per pound.....	20	
Sweetbread, beef, per pound.....	40	
Eggs, fresh, dozen.....	25	
one-half dozen only.....	13	
Bluefish, per pound.....	15	
Halibut, fresh, per pound.....	15	
POULTRY AND GAME.		
Chicken—Fancy roasting, milk fed, large, each.....	1.40	
Fancy roasting, milk fed, med., each.....	1.10	
Fancy roasting, corn fed, about 5½ pounds, each.....	1.25	
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00	
Fowls, each.....	1.00	
Ducks, (Western, about 4½ pounds), each.....	1.25	
Broilers, milk fed, each.....	70	
Broilers, corn fed, each.....	60	
Turkeys, per pound.....	26	
Squabs, each.....	50	
Rabbits, skinned, each.....	30	
Ducks, blackhead, pair.....	60	
Partridges, pair.....	1.30	
Grouse, per pair.....	1.30	
Pheasants, per pair.....	1.30	
CURED AND PICKLED MEATS.		
Ham—Sugar cured, per pound.....	20	
Sliced, per pound.....	22	
Half, for boiling, per pound.....	21	
Boiled, per pound.....	28	
Hocks, per pound.....	18	
Beef, salt, family, per pound.....	12	
Bacon—Breakfast, whole piece, per pound.....	25	
Sliced, per pound.....	26	
Ham, lunch, per pound.....	32	
Pork, salt, family, per pound.....	14	
Ox tongues, each.....	1.00	
Pigs feet, per pound.....	9	
Tongues, per pound.....	18	
DAIRY PRODUCTS.		
Butter—Creamery, special per pound.....	36	
Sheffield Farms, extra fancy, per lb.....	46	
Cheese—Philadelphia cream, cake.....	10	
Roquefort, per pound.....	35	
Young America, per pound.....	22	
Swiss, per pound.....	28	

Cheese—Edam, each.....	1.00
Parmesan, per pound.....	35
Gouda, per pound.....	30
Snappy, per cake.....	10
Milk (Certified), per bottle.....	**20
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	125
1-gallon.....	150

VEGETABLES AND FRUITS.

Beets, per pound.....	3
Celery, per head.....	11
Cabbage, per pound.....	3
Cucumbers, per pound.....	14
Carrots, per pound.....	3
Egg Plant, per pound.....	10
Lettuce.....	*12
Onions, per pound.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	-2
Parsnips, per pound.....	3½
Parsley, bunch.....	5
Rhubarb, per pound.....	4
Squash, per pound.....	7
Turnips, per pound.....	3
Tomatoes.....	10
Apples, per pound.....	16
Grape fruit, tropical, each.....	4
American, each.....	8
Lemons, dozen.....	24
Limes, per 100.....	80
Oranges, Jamaica, per dozen.....	12

*Indicates reductions from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advance on last list.
‡Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock, next lightest weight is supplied and refund note sent for difference.
§Sold only from commissaries; no orders taken for delivery.

Rainfall from May 1 to May 24, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon	1.66	9	7.20
Balboa	1.51	11	7.22
*Miraflores	2.45	16	10.13
Pedro Miguel	2.36	7	10.60
Rio Grande	2.02	7	9.61
<i>Central Section—</i>			
Culebra	2.00	7	8.43
*Camacho	3.16	22	12.19
Empire	1.91	11	8.68
Gambua	2.27	22	11.57
*Juan Mina	2.02	7	11.73
Alhajuela	1.33	8	9.07
*El Vigia	1.99	15	10.99
*Gorgona	1.70	15	10.10
*Frijoles	3.07	16	18.61
*Monte Lirio	2.26	15	13.81
<i>Atlantic Section—</i>			
Gatun	3.19	14	14.92
*Brazos Brook	3.90	14	17.06
Colon	4.74	21	21.67
Porto Bello†	10.57	15	27.15

*Standard rain gage—readings at 5 p. m. daily.
Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., May 23.

Legal Notice.

United States of America } First Judicial Circuit.
Canal Zone.
The following named Americans citizens died intestate leaving personal property within the Canal Zone to the amount stated:
U. S. currency.
Andrew R. Murphy.....\$ 3.70
John Ryan.....2.40
George Peter......83
John Williams.....2.00
Michael Coogan.....29.50
Harry Tafel.....8.00
Henry G. Day.....63.58

The collector of revenues has filed a petition for the escheat of the above named estates, in accordance with Section 779 of the Code of Civil Procedure.

Notice is hereby given to all heirs or creditors of the above estates to appear before this Court in the court-house at Ancon, on July 12, 1913, at 9 o'clock a. m., to establish their claims or to show cause why the said estates should not escheat to the Government of the Canal Zone.

WALTER EMERY,
Circuit Court Clerk.

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa, at 9 o'clock Tuesday, Thursday and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Allianca.....	P. R. R. Monday.....	May 26
Colon.....	P. R. R. Monday.....	June 2
Advance.....	P. R. R. Saturday.....	June 7
Panama.....	P. R. R. Friday.....	June 13
Allianca.....	P. R. R. Thursday.....	June 19
Colon.....	P. R. R. Thursday.....	June 26
Advance.....	P. R. R. Wednesday.....	July 2
Panama.....	P. R. R. Tuesday.....	July 8
Allianca.....	P. R. R. Monday.....	July 14
Colon.....	P. R. R. Saturday.....	July 19
Advance.....	P. R. R. Saturday.....	July 26
Panama.....	P. R. R. Friday.....	Aug. 1

CRISTOBAL TO NEW YORK.

Panama.....	P. R. R. Sunday.....	June 1
Allianca.....	P. R. R. Saturday.....	June 7
Colon.....	P. R. R. Saturday.....	June 14
Advance.....	P. R. R. Thursday.....	June 19
Panama.....	P. R. R. Wednesday.....	June 25
Allianca.....	P. R. R. Tuesday.....	July 1
Colon.....	P. R. R. Tuesday.....	July 8
Advance.....	P. R. R. Monday.....	July 14
Panama.....	P. R. R. Sunday.....	July 20
Allianca.....	P. R. R. Saturday.....	July 26
Colon.....	P. R. R. Thursday.....	July 31
Advance.....	P. R. R. Thursday.....	Aug. 7

NEW YORK TO COLON.

Metapan.....	U. F. C. Wednesday.....	May 21
Prinz August Wilhelm H.-A.....	Saturday.....	May 24
Tivives.....	U. F. C. Saturday.....	May 24
Tagus.....	R. M. Saturday.....	May 24
Zacapa.....	U. F. C. Wednesday.....	May 28
Emil L. Boas.....	H.-A. Saturday.....	May 31
Sixaola.....	U. F. C. Saturday.....	May 31
Prinz Joachim.....	H.-A. Saturday.....	June 7
Oruba.....	R. M. Saturday.....	June 7
Thames.....	R. M. Saturday.....	June 21

COLON TO NEW YORK.

Santa Marta.....	U. F. C. Thursday.....	May 29
Pastores.....	U. F. C. Tuesday.....	June 3
Carl Schurz.....	H.-A. Wednesday.....	June 4
Metapan.....	U. F. C. Thursday.....	June 5
Tivives.....	U. F. C. Tuesday.....	June 10
Thames.....	R. M. Tuesday.....	June 10
Prinz August Wilhelm H.-A.....	Tuesday.....	June 10
Zacapa.....	U. F. C. Thursday.....	June 12
Emil L. Boas.....	H.-A. Tuesday.....	June 17
Sixaola.....	U. F. C. Tuesday.....	June 17
Prinz Joachim.....	H.-A. Tuesday.....	June 24
Trent.....	R. M. Tuesday.....	June 24

NEW ORLEANS TO COLON.

Atenas.....	U. F. C. Saturday.....	May 24
Parismina.....	U. F. C. Wednesday.....	May 28
Turrialba.....	U. F. C. Saturday.....	May 31

COLON TO NEW ORLEANS.

Abangarez.....	U. F. C. Thursday.....	May 29
Heredia.....	U. F. C. Saturday.....	May 31
Atenas.....	U. F. C. Thursday.....	June 5
Parismina.....	U. F. C. Saturday.....	June 7
Turrialba.....	U. F. C. Thursday.....	June 12

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays at 3 p. m.; ships for New York via Kingston on Tuesdays at 10 a. m. and Thursdays at 10 a. m.; for Bocas del Toro on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct, Tuesdays at 3 p. m.

The National Navigation Company of Panama will have sailings for Aguadulce and Pedregal, from Panama, on May 30, June 10 and 25.

Hamburg-American steamers sail for New York, via Kingston and Santiago de Cuba on Tuesdays; the *Prinz Joachim* and *Prinz August Wilhelm* at 10 a. m., and the *Emil L. Boas* and *Carl Schurz* at 2 p. m.

The following ships, arrived at, or departed from, the port of Balboa during the week ending May 24:

Arrivals—May 20, *Limari*, from south ports; May 23, *Chile*, from Guayaquil; May 24, *Pennsylvania*, from San Francisco; May 24, *City of Para*, from San Francisco; May 23, *Stephan*, (cable ship) from Germany.

Departures—May 19, *Manavi*, to intermediate ports; May 19, *Quillota*, to south ports; May 21, *Pachitea*, to south ports.

STATEMENT OF
CONSTRUCTION EXPENDITURES
TO MARCH 31, 1913

(Part II of The Canal Record, May 28, 1913.)

STATEMENT OF CONSTRUCTION EXPENDITURES TO MARCH 31, 1913.

Table No. 1.

Includes administrative and general expenses, but does not include "General Items" or expenditures for sanitation, hospitals, or civil administration.

ITEMS.	THIRD QUARTER, FISCAL YEAR 1913.			TO DECEMBER 31, 1912			TOTAL TO MARCH 31, 1913.		
	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
<i>Atlantic Division—</i>	<i>Cubic Yards.</i>								
1 Dry excavation, prism.....		\$1,205.64		2,181,998	\$1,458,183.12	\$0.6683	2,181,998	\$1,456,977.48	\$0.6677
2 Hydraulic excavation, prism.....				29,605	11,671.32	0.3942	29,605	11,671.32	0.3942
3 Dredging excavation, prism.....	1,192,530	\$346,540.14	\$0.2906	32,197,473	7,637,184.31	0.2372	33,390,003	7,983,724.45	0.2391
<i>Gatun Spillway—</i>									
4 Dry excavation.....		\$142.60		1,544,202	\$1,096,180.59	\$0.7099	1,544,202	\$1,096,180.59	\$0.7099
5 Preparing foundations.....		44,266		44,266	96,875.93	2.1885	44,266	97,018.53	2.1917
6 Masonry.....	9,873	67,519.23	\$6.8388	211,619	1,689,141.38	7.9820	221,492	1,756,660.61	7.9310
7 Ironwork.....		29,097.32			176,226.74			147,129.42	
8 Back filling.....				24,716	12,456.18	.5400	24,716	12,456.18	.5040
9 Operating Machinery.....		16,098.04			68,834.23			84,932.27	
10 Gates and Caisson.....		62,818.65						62,818.65	
Total.....		\$117,481.20			\$3,139,715.05			\$3,257,196.25	
<i>Gatun Dam—</i>									
11 Dredging excavation.....		\$74,913.01	\$0.2240	38,425	\$20,041.19	\$0.5216	38,425	\$20,041.19	\$0.5216
12 Dry filling.....	334,502			11,240,263	5,016,558.47	.4463	11,574,765	5,091,471.48	.4399
13 Hydraulic filling.....		15,799.19		10,728,965	3,230,626.94	.3011	10,728,965	3,214,827.75	.2996
14 Paving.....		90,006.50			15,192.60			105,199.10	
Total.....		\$149,120.32			\$8,282,419.20			\$8,431,539.52	
<i>Gatun Locks—</i>									
15 Dry excavation.....	76,154	\$37,565.98	\$0.4933	4,550,395	\$3,088,411.25	\$0.6787	4,626,549	\$3,125,977.23	\$0.6757
16 Dredging excavation.....				1,756,977	559,881.42	.3187	1,756,977	559,881.42	.3187
17 Preparing foundations, excavation.....	14,162	37,810.70	2.6609	216,881	413,170.89	1.9051	231,043	450,981.59	1.9519
18 Preparing foundations, dredging.....	5,603	13,080.10	2.3345	13,000	20,447.40	1.5729	18,603	33,527.50	1.8023
19 Preparing foundations, filling.....				40,117	15,226.73	.3796	40,117	15,226.73	.3796
20 Preparing foundations, concrete piling (lineal feet).....				83,670	134,572.36	1.6084	83,670	134,572.36	1.6084
21 Preparing foundations, wooden piling (lineal feet).....									
22 Filling around south approach wall, dry.....	159,329	93,557.00	.5872	92,670	70,182.45	.7573	251,999	163,739.45	.6498
23 Filling around south approach wall, hydraulic.....				7,072	3,777.61	.5342	7,072	3,777.61	.5342
24 Masonry.....	94,398	611,029.20	6.4729	594,495	94,077.49	.1582	594,495	94,077.49	.1582
25 Gates and Fender Chains.....		478,479.53		1,908,448	14,289,657.38	7.4876	2,002,846	14,900,686.58	7.4398
26 Ironwork.....		17,147.69			1,554,905.08			2,033,384.61	
27 Backfilling.....	108,881	23,965.06	.2201	1,828,114	944,167.20	.5165	1,936,995	968,132.26	.4998
28 Filling center wall.....		1,757.07		113,163	93,510.16	.8263	113,163	91,753.09	.8108
29 Operating machinery.....		688,171.88			1,611,473.94			2,299,645.82	
30 Emergency Dams.....		273,513.29			333,389.85			606,903.14	
31 Control House.....		4,339.02						4,339.02	
Total.....		\$2,276,902.38			\$24,550,140.98			\$26,827,043.36	
<i>Gatun power plant (permanent)</i>									
32 Dry excavation.....				87,067	\$35,310.45	\$0.4056	87,067	\$35,310.45	\$0.4056
33 Preparing foundations.....	369	\$3,574.98	\$9.6884	10,645	17,320.03	1.6271	11,014	20,895.01	1.8971
34 Masonry.....	1,140	8,684.32	7.6178	649	9,626.08	14.8322	1,789	18,310.40	10.2350
35 Machinery.....		21,660.89			182,802.65			204,463.54	
36 Transmission line.....		37.73			37.73				
Total.....		\$33,882.46			\$245,096.94			\$278,979.40	
<i>Gatun-Mindi Levee—</i>									
37 Dry fill.....				177,158	\$68,985.15	\$0.3894	177,158	\$68,985.15	\$0.3894
38 Hydraulic fill.....				20,398	3,483.32	.1708	20,398	3,483.32	.1708
Total.....					\$72,468.47			\$72,468.47	
39 Clearing drift in Gatun Lake.....		\$804.96			\$3,156.99			\$3,961.95	
40 Colon Breakwater.....	55,337	\$25,880.59		954,520	\$2,095,889.18	\$2.1958	1,009,857	\$2,348,769.77	
41 Terminal facilities—Cristobal.....		\$7,670.06			\$4,924.98			\$12,595.04	
Total construction cost, Atlantic Division.....		\$3,184,076.47			\$47,500,850.54			\$50,684,927.01	
42 Plant and equipment to be absorbed in construction costs after Mch. 31, 1913.....								664,335.19	
Total expenditures, Atlantic Division.....								\$51,349,262.20	
<i>Central Division—</i>									
43 Dry excavation, prism.....	3,316,280	\$1,900,939.93	\$0.5732	100,915,892	\$80,048,078.12	\$0.7932	104,232,172	\$81,949,018.05	\$0.7814
44 Clearing Canal line, without excavation, (acres).....				2,280	141,426.75	62.0293	2,280	141,426.75	62.0293
45 Dredging excavation.....					9,798.40			9,798.40	
46 Masonry.....				1,271	8,353.66	6.5725	1,271	8,353.66	6.5725
47 Masonry, cement gun facing (sq. yds.).....				4,240	4,079.11	.9598	4,240	4,079.11	.9598
Total construction cost Central Division.....		\$1,900,939.93			\$80,211,736.04			\$82,112,675.97	
48 Plant and equipment to be absorbed in construction costs after Mch. 31, 1913.....								\$52,427.27	
Total expenditures, Central Division.....								\$82,060,248.70	
<i>Pacific Division—</i>									
49 Dry excavation, prism.....	1,105,745	\$704,872.44	\$0.6375	2,541,536	\$2,056,688.82	\$0.8092	3,647,281	\$2,761,561.26	\$0.7572
50 Dredging excavation, prism.....	833,902	\$443,723.71	\$0.5321	34,628,588	\$8,529,539.96	\$0.2463	35,462,490	\$8,973,263.67	\$0.2530
51 Hydraulic excavation, prism.....				1,549,904	\$1,120,907.35	\$0.7232	1,549,904	\$1,120,907.35	\$0.7232
<i>Pedro Miguel Dam—</i>									
52 Masonry.....	630	\$3,038.81	\$4.7681	937	\$5,678.15	\$6.0599	1,567	\$8,716.96	\$5.5628
53 Dry excavation.....	304	446.84	1.4699	10,171	19,403.19	1.9077	10,475	19,850.03	1.8950
54 Dry filling.....	22,198	4,890.04	.2203	670,680	327,084.04	.4877	692,878	331,974.08	.4791
Total.....		\$8,375.69			\$352,165.38			\$360,541.07	
<i>Pedro Miguel Locks—</i>									
55 Dry excavation.....				1,133,280	\$1,031,422.86	\$0.9101	1,133,280	\$1,031,422.86	\$0.9101
56 Preparing foundations.....	2,496	\$6,040.06	\$2.4199	172,680	466,378.77	2.7008	175,176	472,418.83	2.6968
57 Masonry.....	15,258	116,767.79	7.6529	888,524	5,151,930.50	5.7983	903,782	5,268,698.29	5.8296
58 Gates and Fender Chains.....		326,448.11			860,729.35			1,187,177.46	
59 Ironwork.....		6,973.68			660,809.03			667,782.71	
60 Backfilling.....	56,825	27,841.12	.4899	704,205	289,762.25	.4115	761,030	317,603.37	.4173
61 Filling center wall.....	73,864	23,927.01	.3239	70,742	48,629.46	.6874	144,606	72,556.47	.5018
62 Operating machinery.....		357,644.25			865,629.73			1,223,273.98	
63 Emergency dams.....		64,285.66			29,927.21			94,212.87	
Total.....		\$929,927.68			\$9,405,219.16			\$10,335,146.84	
<i>Miraflores West Dam—</i>									
64 Dry filling.....	130,995	\$50,897.95	\$0.3886	1,488,419	\$730,255.56	\$0.4886	1,619,414	\$781,153.51	\$0.4824
65 Hydraulic filling.....		132.63			39,473.76			39,606.39	
66 Masonry, core wall.....	3,813	18,595.92	4.8770	590	2,668.43	4.5228	4,403	21,264.35	4.8295
67 Dry excavation.....				1,863	23,252.74	12.4813	1,863	23,252.74	12.4813
Total.....		\$69,626.50			\$795,650.49			\$865,276.99	

Bold face type indicates credit.

(Table 1—Continued.)

ITEMS.	THIRD QUARTER, FISCAL YEAR 1913.			TO DECEMBER 31, 1912.			TOTAL TO MARCH 31, 1913.		
	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
<i>Miraflores East Dam and Spillway—</i>									
68 Excavation.....	90,427	\$134,835.61	\$1.4911	15,765	\$51,253.86	\$3.2511	106,192	\$186,089.47	\$1.7524
69 Masonry.....	17,162	96,019.68	5.5949				17,162	96,019.68	5.5949
70 Iron work.....		16,990.49			51,094.07			34,103.58	
71 Operating Machinery.....		57,489.00						57,489.00	
72 Gates and Caisson.....		52,108.21						52,108.21	
Total.....		\$323,462.01			\$102,347.93			\$425,809.94	
<i>Miraflores Locks—</i>									
73 Dry excavation, diversions.....				5,885	\$2,028.98	\$0.3448	5,885	\$2,028.98	\$0.3448
74 Dry excavation, in locks.....				2,222,582	2,063,288.45	.9283	2,222,582	2,063,288.45	.9283
75 Dredging excavation.....				309,647	142,379.66	.4598	309,647	142,379.66	.4598
76 Hydraulic excavation.....				332,703	195,299.02	.5870	332,703	195,299.02	.5870
77 Preparing foundations, excavation.....	13,087	\$29,205.98	\$2.2317	402,504	759,805.56	1.8877	415,591	789,011.54	1.8985
78 Preparing foundations, wooden piles (lin feet).....	13,380	2,563.34	.1916	31,325	58,927.08	1.8812	44,705	61,490.42	1.3755
79 Masonry.....	104,730	614,220.81	5.8648	1,356,129	7,116,417.00	5.2476	1,460,859	7,730,637.81	5.2918
80 Gates and Fender Chains.....		338,453.75			628,457.99			966,911.74	
81 Iron work.....		31,504.03			859,126.84			890,630.87	
82 Backfilling.....	279,779	108,579.96	.3881	1,507,930	543,196.33	.3602	1,787,709	651,776.29	.3646
83 Filling center wall.....	9,466	7,652.98	.8085	20,012	26,353.53	1.3169	29,478	34,006.51	1.1536
84 Operating machinery.....		417,235.72			637,235.41			1,054,471.13	
85 Emergency dams.....		4,530.58			15,995.18			20,525.76	
Total.....		\$1,553,947.15			\$13,048,511.03			\$14,602,458.18	
<i>La Boca Locks and Dams—(abandoned)...</i>									
86 Dry excavation.....				78,233	\$158,343.29	\$2.0240	78,233	\$158,343.29	\$2.0240
87 Construction dam.....					315,350.07			315,350.07	
88 Construction locks.....					159,306.40			159,306.40	
Total.....					\$632,999.76			\$632,999.76	
89 Naos Island breakwater.....	162,297	\$65,413.04	\$0.4092	1,121,233	\$300,118.89	\$0.2677	1,283,530	\$366,531.93	\$0.2856
90 Terminal Facilities—Balboa.....		425,135.31			\$736,009.69			\$1,161,145.00	
Total construction cost, Pacific Division.....		\$4,525,483.53			\$37,080,158.46			\$41,605,641.99	
91 Plant and equipment to be absorbed in construction costs after Mch. 31, 1913.....								\$1,578,126.98	
Total expenditures, Pacific Division.....								\$43,183,768.97	
92 Lighting and buoying canal.....		\$39,604.75			\$199,474.93			\$239,079.68	
93 Permanent buildings.....		\$16,498.82			\$6,466.99			\$22,965.81	
94 Electric transmission line.....		\$5,009.70			\$619.26			\$5,628.96	
Total expenditures, constr. and eng'nr'g.....								\$176,860,951.32	

Item No. 45—Central Division Dredging Excavation Prism, preliminary surveys.
Item No. 47—Represents operation of cement gun used in facing walls of the Cut.
Item No. 65—Pacific Division, Miraflores Dam, Hydraulic Filling. Expenditures represent cost of pipe lines, flumes, etc. 661,048 cubic yards have been deposited in the dams from dredges and hydraulic excavation in lock chambers and in prism below the locks. The expense thereof has been charged to excavation.
Items Nos. 86, 87, 88—Pacific Division, La Boca Locks and Dams. This expense was incurred prior to the adoption of Miraflores as the site for the lower locks and dam at the Pacific entrance of the Canal.
Item No. 89—Naos Island Breakwater. Though shown under Pacific Division, the breakwater is being constructed entirely by the Central Division with material from the Cut. Only the excess cost of dumping here as compared with regular dumps is charged to this item.
Items Nos. 42, 48, and 91—The expenditures from plant and equipment are absorbed in the construction costs on the basis of estimated cost of the plant and estimated quantities of work to be done. The amounts shown under these items represent the balances which were to be absorbed into construction costs after March 31st, 1913.
General—When the excavated material is used for filling, such as dams, back-filling, etc., the cost of dumping only is charged to the item benefited, other expenses being charged to Excavation.

DAM CONSTRUCTION.

Table No. 2.

Detailed cost per cubic yard for quarter ending March 31, 1913.

	GATUN DAM.				PEDRO MIGUEL DAM.				MIRAFLORES DAM.			
	Jan.	Feb.	Mar.	Total	Jan.	Feb.	Mar.	Total	Jan.	Feb.	Mar.	Total
<i>Excavation—Quantities—cubic yards</i>					304			304	6,375	10,177	25,600	42,152
Drilling.....									\$0.2140	\$0.2664	\$0.1057	\$0.1609
Blasting.....									.0227	.0461	.0803	.0633
Excavation by power.....									.1672	.1877	.0655	.0651
Excavation by hand.....					\$1.1960			\$1.1960	1.3511	1.4820	.5224	.8794
Transportation.....									.1711	.1877	.1545	.1650
Tracks.....									.5983	.1527	.0687	.1691
Trestles.....									.4964	.2321	.1213	.2048
Pumps.....									.1220	.1578	.1100	.1233
Maintenance of equipment.....					.0004			.0004	.1664	.1630	.1350	.1465
Plant arbitrary.....									.0300	.0300	.0300	.0300
Excavation by pumps.....												
Division expense.....					.0679			.0679	.1278	.0984	.0679	.0843
Total division cost.....				\$1.2643				\$1.2643	\$3.4670	\$2.8162	\$1.4613	\$2.0917
Administrative and general expense.....				.0921				.2056	.2673	.1875	.0824	.1357
Total cost.....				\$1.3564				\$1.4699	\$3.7343	\$3.0037	\$1.5437	\$2.2274
<i>*Excavation by Central Division—Quantities—cu.yds</i>									58,171			58,171
Excavation by power.....									80.7038			80.7038
Total Excavation—Quantities—cubic yards.....									64,546	10,177	25,600	100,323
Unit cost.....									\$1.0003	\$3.0037	\$1.5437	\$1.7469
<i>Masonry—Core Walls—cubic yards</i>					630			630	2,628	755	430	3,813
Concrete.....				\$3.8515				\$3.8515	\$3.8709	\$3.8137	\$3.3500	\$3.8008
Plant arbitrary.....				.3911				.3911	.5300	.5300	.5300	.5300
Maintenance of equipment.....				.0650				.0650	.0747	.0923	.0425	.0746
Division expense.....				.0655				.0655	.0624	.0551	.0568	.0604
Total division cost.....				\$4.3731				\$4.3731	\$4.5380	\$4.4911	\$3.9793	\$4.4658
Administrative and general expense.....				.3287				.4504	.2524	.9029	.5187	.4112
Total cost.....				\$4.7018				\$4.8235	\$4.7904	\$5.3940	\$4.4980	\$4.8770

*This excavation was accomplished during the months October 1912 to January 1913 inclusive.
Bold face type indicates credit.

Table No. 2—(Continued)

	GATUN DAM.				PARRA MIGUEL DAM.				MIRAFLORES DAM.			
	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.
<i>Masonry, Spillway—Quantities—cubic yards.</i>									1,077	3,653	12,432	17,162
Cement									\$1.9310	\$1.9923	\$1.5587	\$1.6744
Stone									.6053	.5888	.6138	.6073
Sand									.3804	.3551	.3650	.3639
Mixing									.8242	.8602	.4737	.5780
Wood forms									2.3644	.8098	.3127	.5472
Placing									.5072	1.2374	.7746	.8563
Reinforcement										.0371	.0092	.0145
Power									.0082	.0010	.0199	.0152
Pumping											.0049	.0035
Maintenance of equipment									.1287	.1208	.1325	.1297
Plant arbitrary									.5301	.5300	.5300	.5300
Division expense									.2018	.1409	.0969	.1129
Total division expense									\$7.4813	\$6.6704	\$4.8919	\$5.4329
Administrative and general expense									.4724	.1536	.1375	.1620
Total cost									\$7.9537	\$6.8240	\$5.0294	\$5.5949
<i>Dry Fill—Quantities—cubic yards.</i>	149,609	88,792	96,101	334,502	20,198		2,000	22,198	52,195	35,000	43,800	130,995
Clearing site												
Excavation	\$0.0329	\$0.1049	\$0.1097	\$0.0741								
Tracks	.0210	.0605	.0791	.0482	\$0.0932		\$0.1144	\$0.0951	\$0.0887	\$0.1148	\$0.1016	\$0.1000
Trestles	.0001	.0001										
Transportation	*.1874	.0133	.0485	.0664	.0519		.0671	.0334	.1088	.0152	.0585	.0670
Filling	.0568	.0920	.0927	.0765	.0304		.0767	.0316	.0549	.0843	.0603	.0646
Maintenance of equipment	.0297	.0807	.0487	.0487	.0302		.0330	.0181	.0707	.0099	.0526	.0484
Plant arbitrary							.0300	.0027	.0700	.0700	.0700	.0700
Division expense	.0139	.0151	.0121	.0137	.0096		.0147	.0100	.0163	.0114	.0119	.0135
Total division cost	*0.0330	\$0.3666	\$0.3908	\$0.1948	\$0.2153		\$0.3359	\$0.1929	\$0.4094	\$0.3056	\$0.3549	\$0.3635
Administrative and general expense	.0203	.0475	.0259	.0292	.0138			.0274	.0226	.0422	.0144	.0251
Total cost	*0.0127	\$0.4141	\$0.4167	\$0.2240	\$0.2291		\$0.3359	\$0.2203	\$0.4320	\$0.3478	\$0.3693	\$0.3886
<i>Paving—Excavation for Rip Rap Rock—Quant. cu. yd.</i>		12,256	2,822	15,078								
Clearing		\$0.0168		\$0.0136								
Sluicing		.4339	\$0.5753	.4604								
Drilling		.2599	.6939	.3411								
Blasting		.1699	.4743	.2269								
Loading		.2213	.5203	.2772								
Tracks		.1801	.3668	.2151								
Transportation		.1628	1.0051	.3205								
Maintenance of equipment		.3733	1.3364	.5535								
Plant arbitrary		.0700	.0700	.0700								
Division expense		.0721	.1062	.0785								
Total division cost		\$1.9601	\$5.1483	\$2.5568								
Administrative and general expense		.2090	.4421	.2526								
Total cost		\$2.1691	\$5.5904	\$2.8094								
<i>Paving, Placing Rip Rap—Quantities—cubic yards</i>		12,256	13,396	25,652								
Tracks		\$0.1284	\$0.0715	\$0.1589								
Placing		.1722	.1583	.1649								
Transportation, Rock			.0142	.0074								
Maintenance of equipment			.1386	.0724								
Plant arbitrary			.0552	.0288								
Division expense		.0195	.0142	.0214								
Total division cost		\$0.3201	\$0.4520	\$0.4538								
Administrative and general expense		.0381	.0284	.0409								
Total cost		\$0.3582	\$0.4804	\$0.4947								
Total cost Rip Rap in place †		\$2.5273	\$1.6581	\$2.1461								
<i>Paving—Placing Broken Stone—Quantities cu. yds.</i>	3,380	4,260	3,880	11,520								
Tracks	\$0.8410	\$0.0764	\$0.0551	\$0.2936								
Placing	.4723	.5406	.4158	.4785								
Grading	1.1238	.7358		.6018								
Crushed Stone	1.5180	1.1513	1.2725	1.2997								
Division expense	.1719	.0760	.0305	.0888								
Total division cost	\$4.1270	\$2.5801	\$1.7739	\$2.7624								
Administrative and general expense	.2781	.1496	.0612	.1576								
Total cost ‡	\$4.4051	\$2.7297	\$1.8351	\$2.9200								
<i>Surfacing—Quantities—square yards.</i>			79,670	79,670								
Surfacing			\$0.0190	\$0.0190								
Division expense			.0012	.0012								
Total division cost			\$0.0202	\$0.0202								
Administrative and general expense			.0023	.0023								
Total cost			\$0.0225	\$0.0225								

Bold face type indicates credit.

†During the quarter 33,370 square yards were riprapped, at an average cost of \$1.4347 per square yard.

‡During the quarter, 8,874 square yards were paved with crushed rock, at an average cost of \$0.4109 per square yard.

LOCKS AND SPILLWAYS CONSTRUCTION.

Table No. 3.

Detailed cost per cubic yard for quarter ending March 31 1913:

ITEMS.	GATUN SPILLWAY.				GATUN LOCKS.				PEDRO MIGUEL LOCKS.				MIRAFLORES LOCKS.			
	Jan.	Feb.	Mar.	Total	Jan.	Feb.	Mar.	Total	Jan.	Feb.	Mar.	Total	Jan.	Feb.	Mar.	Total
<i>Dry excavation—Quantities—cubic yards.</i>					40,538		35,616	76,154								
Drilling				\$0.0203			\$0.0281	\$0.0240								
Blasting				.0018			.0117	.0060								
Loading by power				.0560			.0431	.0500								
Tracks				.0942			.0597	.1003								
Transportation				.1664			.1396	.1535								
Dumps																
Trestles																
Pumps				.0406			.0529	.046								
Power																
Maintenance of equipment				.0608			.0414	.0583								
Plant arbitrary																
Division expense				.0280			.0078	.0204								
Total division cost				\$0.4681			\$0.3843	\$0.4593								
Admin. and general expense				.0404			.0177	.0340								
Total cost				\$0.5085			\$0.4020	\$0.4933								
<i>Preparing foundations, excavation—Quantities—cubic yards.</i>					4,954	8,851	357	14,162	1,248	448	800	2,496	7,632	2,355	3,100	13,087
Drilling									\$0.2805				\$0.1402	\$0.0011	\$0.0148	\$0.1965
Blasting													.0624	.5366	.1315	.1641
Loading by power				\$0.4224	\$0.1318	\$1.0122	\$0.2556	.0763	.4303	\$0.2612	\$1.3312	.0382	1.0153	2.0588	1.6387	1.3508
Loading by hand				.7041	.7821	1.7690	.7797									
Transportation				.0419	.2249	.2943	.1551	.0187	.1710	.0338	.0510	.0631	.0214	.0184	.0184	.0450
Tracks				.9105	.3400	3.7877	.6341	.7667	1.3413	.3793	.7456	.1256	.0156	.3579	.1608	
Dumps																
Pumps					.1499		.0937	.0191	.0284	.0141	.0191	.0196	.0128	.0048	.0149	
Coffer dams																
Maintenance of equipment				.2193	.4047	1.5429	.3686	.3761	.0985	.3016	.3024	.0709	.2445	.1637	.1241	
Plant arbitrary												.0300	.0300	.0300	.0300	
Division expense				.1508	.1007	.6013	.1308	.1011	.5330	.0976	.1775	.0732	.1588	.1248	.1008	
Total division cost				\$2.4490	\$2.1341	\$9.0074	\$2.4176	\$2.0688	\$2.4334	\$2.1576	\$2.1627	\$1.4612	\$3.0933	\$2.6663	\$2.0404	
Admin. and general expense				.2475	.2125	1.3085	.2523	.2401	.5283	.1320	.2572	.1179	.4028	.2114	.1913	
Total cost				\$2.6965	\$2.3466	\$10.3159	\$2.6699	\$2.3089	\$2.9617	\$2.2896	\$2.4199	\$1.5791	\$3.4961	\$2.8777	\$2.2317	
<i>Preparing foundations Dredging—Quantities cu. yards.</i>					1,031	2,360	2,212	5,603								
Dredging				\$1.3606	\$0.8657	\$1.0163	\$1.0163									
Sluicing				.7758	.7332	1.0610	.8704									
Pipe Lines				.2545	.0930	.1124	.1108									
Maintenance of equipment				.4885		.0529	.1304									
Division expense				.1759		.0556	.0543									
Total division cost				\$3.0553	\$1.6919	\$2.2982	\$2.1822									
Admin. and general expense				.4104		.1946	.1523									
Total cost				\$3.4657	\$1.6919	\$2.4928	\$2.3345									
<i>Preparing foundations, wooden piling—Quantities—lin. ft.</i>					69,185	17,331	72,813	159,329					2,605	3,950	6,825	13,380
Wooden piles in place				\$0.5609	\$0.6315	\$0.2731	\$0.4371						\$0.1604	\$0.2205	\$0.1465	\$0.1711
Maintenance of equipment				.0065	.0606	.0146	.0160									
Plant arbitrary				.0120	.0120	.0785	.0424									
Division expense				.0152	.0253	.0125	.0151						.0089	.0116	.0068	.0086
Total division cost				\$0.5946	\$0.7294	\$0.3787	\$0.5106						\$0.1693	\$0.2321	\$0.1533	\$0.1797
Admin. and general expense				.1129	.0907	.0387	.0766						.0138	.0097	.0125	.0119
Total cost				\$0.7075	\$0.8201	\$0.4174	\$0.5872						\$0.1831	\$0.2418	\$0.1658	\$0.1916
Masonry.																
<i>Concrete—Quantities—cubic yds.</i>	3,817	3,028	2,659	9,504	28,689	30,680	33,424	92,793	4,950	2,362	123	7,435	45,501	31,692	15,742	92,935
Cement	\$1.3371	\$1.2863	\$1.4597	\$1.3552	\$1.2807	\$1.3192	\$1.2612	\$1.2863	\$1.5454	\$1.7475	\$1.3438	\$1.6062	\$1.9279	\$1.9789	\$1.5795	\$1.8863
Stone	1.0882	.9562	.9955	1.0207	1.9956	2.0328	1.4369	1.8067	.5567	.5873	.6170	.5674	.6045	.5858	.5760	.5933
Sand	.4741	.5939	.3681	.4820	.6110	.6205	.3770	.5299	.3512	.3550	.3680	.3527	.3800	.3550	.3650	.3689
Mixing	.2400	.3354	.3283	.2951	.1248	.1707	.1594	.1524	1.3123	1.4268	.8634	1.3412	.1967	.1795	.2237	.1954
Wood forms	1.2332	1.5645	1.4952	1.4120	.5527	.6487	.6386	.6154	.5391	.7854	6.2764	.7123	.3694	.5295	.9000	.5140
Steel forms																
Placing	.7326	1.0951	.9761	.9163	.3594	.3505	.3705	.3605	.3976	.6273	14.4731	.7035	.3695	.4878	.6963	.4652
Reinforcements	.0469	.1182	.0017	.0570	.0084	.0017	.0201	.0104								
Pumps			.0101	.0028	.0616	.0460	.0584	.0553	.0098	.0283	.0139	.0158	.0196	.0128	.0049	.0148
Power					.0623	.0477	.0458	.0515	.0005			.0004	.0371	.0505	.0470	.0434
Coffer dams		.0157		.0050												
Maintenance of equipment	.1798	.3481	.2890	.2640	.1732	.1629	.1641	.1665	.0482	.1317	.5995	.0838	.1405	.1642	.2377	.1651
Plant arbitrary	.2540	.2540	.2540	.2540	.9380	.9380	.9380	.9380	.0498			.0331	.5304	.5305	.5300	.5303
Division expense	.1511	.1417	.1234	.1404	.0796	.0700	.0616	.0699	.1384	.1607	1.2853	.1644	.0644	.0747	.1258	.0783
Total division cost	\$5.7370	\$6.7091	\$6.3011	\$6.2046	\$6.2473	\$6.4087	\$5.5300	\$6.0423	\$4.8494	\$5.8500	25.8404	\$5.5146	\$4.6717	\$4.9799	\$5.3307	\$4.8884
Admin. and general expense	.4505	.5179	.5875	.5103	.2696	.2072	.2640	.2469	.4308	.7949	11.3641	.2826	.3958	.7499	.4004	
Total cost	\$6.1875	\$7.2270	\$6.8886	\$6.7149	\$6.5169	\$6.6159	\$5.7940	\$6.2892	\$5.2802	\$6.6449	37.2045	\$6.2419	\$4.9543	\$5.3757	\$6.0806	\$5.2888
<i>Masonry, reinforced—Quantities—cubic yards.</i>	369			369	101		1,504	1,605	1,210	1,935	4,678	7,825	4,973	3,292	3,530	11,795
Cement	\$1.3381			\$1.3381	\$1.8812		\$1.3049	\$1.3411	\$2.1936	\$2.3800	\$1.6935	\$1.9407	\$2.1477	\$2.6633	\$2.0413	\$2.2597
Stone	1.0906			1.0906	.3285		1.4068	1.3856	.5850	.4044	.5875	.5411	.5788	.5609	.5876	.5764
Sand	.4716			.4716	.0096		.3969	.4103	.3857	.3633	.3669	.3686	.3816	.3615	.3681	.3721
Mixing	.3826			.3826	\$1.5229		.1078	.0168	1.5997	1.5640	.7769	1.0989	.5984	.4929	.4959	.5383
Wood forms	3.1144			3.1144	.2581		2.1337	.1533	2.5596	1.6943	1.3024	1.5938	3.5060	3.3784	2.1742	3.0718
Steel forms																
Power					.2247		.0101	.0297		.0018	.0011	.0223	.0106	.0219	.0271	
Placing	.9829			.9829	.3224		1.0105	.8823	2.0530	1.2737	.7672	1.0913	1.0574	1.6394	1.2887	1.2891
Reinforcements					.3826		2.0600	3.1484	2.7440	1.9734	.7691	1.3724	.5301	.7289	.0822	.4515
Chipping to grade					.4572											
Pumps								.2832								
Maintenance of equipment	.2364			.2364	.7654		.5247	.6294	.0488	.0919	.1039	.0924	.0640	.1322	.1163	.0987
Plant arbitrary	.2540			.2540	.9380		.9380	.9380					.5281	.5296	.5286	.5289
Division expense	.2990			.2990	.3464		.2198	.3820	.3923	.2725	.1923	.2431	.3141	.3228	.2784	.3059
Total division cost	\$8.1696			\$9.0314	\$6.2391		10.1132	15.2794	12.5806	10.0458	\$6.5755	\$8.3627	\$9.7485	10.8633	\$7.9881	\$9.5328
Admin. and general expense	.8804			.9992	.56483		1.0669	1.8119	1.3246	.6883	.4283	.6312	.7141	.0884	.8881	.8706
Total cost	\$9.0500			\$10.0306	\$11.8875		11.1801	17.0913	13.9052	10.7341	\$7.0038	\$8.9939	\$10.4626	11.9517	\$8.8762	\$10.4034

Bold face type indicates credit.

Table No. 3—(Continued.)

ITEMS.	GATUN SPILLWAY.				GATUN LOCKS.				PEDRO MIGUEL LOCKS.				MIRAFLORES LOCKS			
	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.
Total Masonry—Quantities—cubic yards.....	4,186	3,028	2,659	9,873	28,790	30,680	34,928	94,398	6,160	4,297	4,801	15,258	50,474	34,984	19,272	104,730
Total cost.....	\$6 439	\$7 227	\$6 886	\$6 838	\$6 711	\$6 615	\$6 025	\$6 472	\$6 974	\$8 486	\$7 775	\$7 652	\$5 497	\$5 994	\$6 592	\$5 864
Back filling—Quantities—cubic yards.....					33,411	34,498	40,972	108,881	11,023	26,402	19,400	56,825	111,942	77,637	90,200	279,779
Drilling.....					.0002	\$0.0368		\$0.0117								
Blasting.....						.0217		.0069								
Loading.....					.0005	.0393	\$0.0015	.0129								
Tracks.....					.0294	.0959	.0362	.0531	\$0.1470	\$0.0906	\$0.1098	\$0.1081	\$0.0964	\$0.1125	\$0.0695	\$0.0922
Transportation.....					.3065	.0278	.0087	.0820	.0608	.1182	.0798	.0736	.0529	.0520	.0530	.0527
Filling.....					.1296	.1468	.1242	.1330	.0874	.1010	.0884	.0941	.0348	.0610	.0409	.0440
Maintenance of equipment.....					.0014	.1077	.0041	.0360	.0429	.0366	.0393	.0387	.0390	.0122	.0312	.0291
Plant arbitrary.....									.1300	.1300	.1300	.1300	.1100	.1100	.1100	.1100
Division expense.....					.0147	.0254	.0089	.0159	.0133	.0132	.0155	.0140	.0106	.0102	.0085	.0098
Total division cost.....					\$0 1317	\$0.5014	\$0 1836	\$0 1875	\$0 4814	\$0 4896	\$0 4628	\$0 4585	\$0 3437	\$0 3579	\$0 3131	\$0 3378
Admin. and general expense.....					.0219	.0553	.0221	.0326	.0339	.0162	.0508	.0314	.0522	.0828	.0200	.0503
Total cost.....					\$0 1098	\$0 5567	\$0 2057	\$0 2201	\$0 5153	\$0 5058	\$0 5136	\$0 4899	\$0 3959	\$0 4407	\$0 3331	\$0 3881
Filling center wall—Quantities—cubic yards.....									15,448	26,416	32,000	73,864	352	314	8,800	9,466
Loading.....									\$0 0292	\$0 1114	\$0 0560	\$0 0004			\$0 0267	\$0 0248
Tracks.....									.0012	.0002	.0001	.0534			.0026	.0024
Transportation.....															.4881	.5224
Filling.....									1300	.0842	.0624	.0844	\$0 4160	\$0 6030	.0139	.0195
Power.....															.1223	.0901
Maintenance of equipment.....									.0184	.0356	.0390	.0334			.0911	.0878
Plant arbitrary.....									.1300	.1300	.1300	.1300	.1100	.1101	.1100	.1100
Division expense.....									.0053	.0083	.0057	.0065	.0253	.0882	.0319	.0335
Total division cost.....									\$0 3141	\$0 3697	\$0 2932	\$0 3081	\$0 5513	\$0 9375	\$0 7689	\$0 7995
Admin. and general expense.....									.0151	.0121	.0193	.0158	.0378	.0452	.0065	.0090
Total cost.....									\$0 3292	\$0 3818	\$0 3125	\$0 3239	\$0 5891	\$1 9827	\$0 7754	\$0 8085

*Bold face type indicates credit.

DRY EXCAVATION—PRISM.

Table No. 4.

Detailed cost per cubic yard for quarter ending March 31st, 1913.

ITEMS.	ATLANTIC DIVISION.				CENTRAL DIVISION.				PACIFIC DIVISION.			
	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	March	Total.	Jan.	Feb.	March.	Total.
Dry excavation—Quantities—cubic yards.....					1,135,580	996,800	1,183,900	3,316,280	407,967	331,778	366,000	1,105,745
Clearing.....									\$0.0015	\$0.0015		\$0.0010
Drilling.....					\$0 0595	\$0 0600	\$0 0513	\$0 0567	.0496	.0443	\$0 0223	.0390
Blasting.....					.0553	.0460	.0450	.0488	.0229	.0220	.0403	.0284
Loading.....					.0534	.0612	.0489	.0541	.0694	.0802	.0784	.0756
Tracks.....					.1016	.1087	.0910	.1010	.1104	.1825	.1737	.1530
Transportation.....					.0814	.0961	.0937	.0902	.0691	.0985	.0926	.0857
Dumps.....					.0531	.0604	.0503	.0543	.0166	.0241	.0254	.0217
Pumps.....					.0969	.0039	.0039	.0049	.0196	.0148	.0084	.0145
Maintenance of equipment.....					.1131	.1306	.1033	.1149	.0616	.0964	.0787	.0777
Plant arbitrary.....									.0900	.0900	.0900	.0900
Division expense.....					.0109	.0128	.0117	.0118	.0161	.0180	.0198	.0179
Total division cost.....					\$0 5382	\$0 5797	\$0 4991	\$0 5367	\$0 5268	\$0 6723	\$0 6296	\$0 6045
Administrative and general expense.....					.0379	.0415	.0310	.0365	.0282	.0376	.0341	.0330
Total cost.....					\$0 5761	\$0 6212	\$0 5301	\$0 5732	\$0 5550	\$0 7099	\$0 6637	\$0 6375

DREDGING EXCAVATION—PRISM.

Table No. 5.

Detailed cost per cubic yard for quarter ending March 31st, 1913.

ITEMS	ATLANTIC DIVISION.								PACIFIC DIVISION.							
	January.		February.		March.		Total.		January.		February.		March.		Total.	
	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.
Clearing.....	25,995	\$0.0314	19,930	\$0.0349	84,050	\$0.0314	129,975	\$0.0320	215,025	\$0.0006	239,032	\$0.0010	379,845		833,902	\$0.0001
Op'n seagoing suction dredge	25,995	.2195	19,930	.1905	84,050	.0628	129,975	.0325					176,054	\$0.0484	176,054	.0752
R'rs, seagoing suction dredge	32,483	.1829	28,763	.2630	34,709	.2123	95,955	.2175	98,357	.0948	79,606	.1128	69,967	.1113	247,930	.1052
Op'n, small ladder dredges	32,483	.1635	28,763	.0681	34,709	.0712	95,955	.1015	98,357	.0516	79,606	.0308	69,967	.1180	247,930	.0636
Repairs, small ladder dredges									94,660	.1017	133,561	.0690	124,674	.0827	352,895	.0826
Op'n, 5-yard, ladder dredge									94,660	.0840	133,561	.0246	124,674	.0414	352,895	.0465
Repairs, 5-yard ladder dredge									22,008	.1743	25,865	.1259	9,150	.1795	57,023	.1532
Operation, dipper dredges...	51,254	.1144	37,941	.1647	58,879	.1113	148,074	.1260	22,008	.1942	25,865	.0543	9,150	.7795	57,023	.2246
Repairs, dipper dredges...	51,254	.0205	37,941	.1950	58,878	.0905	148,074	.0931								
Operation, pipe line dredges...	398,606	.0419	217,315	.0724	202,605	.0456	818,526	.0509								
Repairs, pipe line dredges...	398,606	.0611	217,315	.0979	202,605	.0240	818,526	.0498								
Pipe lines.....	398,606	.0080	217,315	.0381	202,605	.0191	818,526	.0188								
Dykes.....	398,606	.0003	217,315		202,605		818,526	.0002								
Op'n, tugs, clapets and scows	83,737	.1190	66,704	.1636	93,588	.1132	244,029	.1290	215,025	.0894	239,032	.0795	203,791	.0755	657,848	.0815
R'rs, tugs, clapets and scows	83,737	.0615	66,704	.0778	93,588	.0514	244,029	.0622	215,025	.0175	239,032	.0156	203,791	.0286	657,848	.0201
Drilling.....	40,618	.0706	53,458	.0457	51,166	.0349	145,242	.0489	92,275	.1830	81,256	.1000	82,487	.0884	256,018	.1262
Blasting.....	40,618	.1376	53,458	.1049	51,166	.1300	145,242	.1229	92,275	.2272	81,256	.1331	82,487	.1339	256,018	.1673
Operation, drill barges									92,275	.1159	81,256	.0745	82,487	.1258	256,018	.1059
Repairs, drill barges									92,275	.0107	81,256	.0417	82,487	.0140	256,018	.0216
Operation, rock breakers									92,275	.0861	81,256	.0142	82,487	.0100	256,018	.0388
Repairs, rock breakers									92,275	.0215	81,256	.0088	82,487	.0160	256,018	.0157
Small boats.....	508,338	.0023	303,949	.0029	380,243	.0022	1,192,530	.0024	215,025	.0056	239,032	.0073	379,845	.0079	833,902	.0070
Repairs, misc. equipment...	508,338	.0012	303,949	.0007	380,243	.0006	1,192,530	.0009	215,025	.0104	239,032	.0063	379,845	.0198	833,902	.0135
Plant arbitrary.....	508,338	.0510	303,949	.0510	380,243	.0510	1,192,530	.0510	215,025	.0120	239,032	.0298	379,845	.0168	833,902	.0193
Division expense.....	508,338	.0074	303,949	.0115	380,243	.0113	1,192,530	.0099	215,025	.0091	239,032	.0148	379,845	.0112	833,902	.0117
Total division cost.....	508,338	\$0.2212	303,949	\$0.3605	380,243	\$0.2274	1,192,530	\$0.2587	215,025	\$0.7039	239,032	\$0.5459	379,845	\$0.3344	833,902	\$0.4903
Admin. and general expense	508,338	.0214	303,949	.0472	380,243	.0337	1,192,530	.0319	215,025	.0585	239,032	.0565	379,845	.0231	833,902	.0418
Total cost.....	508,338	\$0.2426	303,949	\$0.4077	380,243	\$0.2611	1,192,530	\$0.2906	215,025	\$0.7624	239,032	\$0.6024	379,845	\$0.3575	833,902	\$0.5321
Earth excavation—per cent...	467,720	.9201	250,491	.8241	329,077	.8654	1,047,288	.8782	122,750	.5709	157,776	.6601	297,358	.7828	577,884	.6930
Rock excavation—per cent...	40,618	.799	53,458	.1759	51,166	.1346	145,242	.1218	92,275	.4291	81,256	.3399	82,487	.2172	256,018	.3070

Bold face type indicates credit.

STONE PRODUCTION.

Table No. 6.

Detailed cost per cubic yard for quarter ending March 31, 1913

Quarrying—Quantities—cubic yards	ANCON QUARRY.			
	Jan.	Feb.	Mar.	Total.
Quarrying—Quantities—cubic yards	70,188	61,544	65,743	197,475
Stripping.....	\$0.0009	\$0.0228	\$0.0732	\$0.0318
Drilling.....	.0539	.0795	.0399	.0572
Blasting.....	.0522	.0582	.0505	.0535
Loading.....	.0441	.0462	.0508	.0470
Transportation.....	.0518	.0585	.0561	.0553
Tracks.....	.0240	.0335	.0444	.0338
Maintenance of equipment.....	.0638	.0628	.0611	.0626
Plant arbitrary.....	.1000	.1000	.1000	.1000
Total.....	\$0.3907	\$0.4615	\$0.4760	\$0.4412
Crushing—				
Operation of crushers.....	\$0.0242	\$0.0249	\$0.0216	\$0.0235
Stone bins and conveyors.....	.0040	.0044	.0043	.0043
Power.....	.0168	.0196	.0197	.0186
Maintenance of equipment.....	.0196	.0083	.0233	.0173
Plant arbitrary.....	.0219	.0220	.0222	.0220
Total.....	\$0.0865	\$0.0792	\$0.0911	\$0.0857
Rail transportation to storage—				
Operation of trains.....	\$0.0367	\$0.0361	\$0.0329	\$0.0353
Repairs to tracks.....	.0170	.0177	.0141	.0162
Dumping in storage.....	.0209	.0166	.0164	.0181
Maintenance of equipment.....	.0400	.0400	.0400	.0400
Plant arbitrary.....				
Total.....	\$0.1146	\$0.1104	\$0.1034	\$0.1096
Division expense.....	\$0.0154	\$0.0151	\$0.0168	\$0.0158
Total cost in storage.....	\$0.6072	\$0.6662	\$0.6873	\$0.6523

SAND PRODUCTION.

Table No. 7.

Detailed cost per cubic yard for quarter ending March 31, 1913.

Dredging—Quantities—cubic yards	GATUN.				CHAMÉ.			
	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.
Dredging—Quantities—cubic yards			10,883	10,883	46,318	35,039	31,798	113,155
Operation, dredges.....			\$0.2827	\$0.2827	\$0.0776	\$0.0959	\$0.1035	\$0.0906
Maintenance of equipment.....			.0791	.0791	.0360	.0231	.0291	.0301
Total.....			\$0.3618	\$0.3618	\$0.1136	\$0.1190	\$0.1326	\$0.1207
Plant arbitrary.....					\$0.0066	\$0.0066	\$0.0066	\$0.0066
Total cost of production.....			\$0.3618	\$0.3618	\$0.1202	\$0.1256	\$0.1392	\$0.1273

Table No. 7—(Continued.)

ITEMS.	GATUN				CHAME			
	Jan.	Feb.	Mar.	Total	Jan.	Feb.	Mar.	Total
Towing—Quantities—cubic yards.....			10,883	10,883	46,318	35,039	31,798	113,155
Operation, tugs and barges.....			\$0.1102	\$0.1102	\$0.0914	\$0.1170	\$0.1412	\$0.1134
Maintenance of equipment.....			.0077	.0077	.0158	.0210	.0610	.0301
Plant arbitrary.....					.0134	.0134	.0134	.0133
Total.....			\$0.1179	\$0.1179	\$0.1206	\$0.1514	\$0.2156	\$0.1568
Unloading—Quantities—cubic yards.....			10,883	10,883	45,318	33,539	30,298	109,155
Operation, cableways and cranes.....			\$0.0625	\$0.0625	\$0.0592	\$0.0824	\$0.0811	\$0.0724
Power.....			.0142	.0142	.0126	.0166	.0177	.0152
Maintenance of equipment.....			.0426	.0426	.0178	.0236	.0200	.0202
Plant arbitrary.....					.0108	.0109	.0113	.0110
Total.....			\$0.1193	\$0.1193	\$0.1004	\$0.1335	\$0.1301	\$0.1188
Rail Transportation to Storage—Quantities—cubic yards.....					45,318	33,539	30,298	109,155
Operation of cranes.....								
Operation of trains.....					\$0.0464	\$0.0491	\$0.0337	\$0.0437
Repairs to tracks.....					.1538	.0461	.2326	.1426
Dumping in storage.....					.0438	.0289	.0176	.0319
Maintenance of equipment.....					.0270	.0236	.0174	.0233
Plant arbitrary.....					.0200	.0200	.0200	.0200
Total.....					\$0.2910	\$0.1677	\$0.3213	\$0.2615
Division expense.....			\$0.0129	\$0.0129	\$0.0170	\$0.0176	\$0.0312	\$0.0219
Total cost in storage.....			\$0.6119	\$0.6119	\$0.6492	\$0.5958	\$0.8374	\$0.6863

COLON BREAKWATER.

Table No. 8.

COLON BREAKWATER.					COLON BREAKWATER—Cont'd.				
ITEMS.	Jan.	Feb.	Mar.	Total.	ITEMS.	Jan.	Feb.	Mar.	Total
Porto Bello Large Rock.					Porto Bello Large Rock—Continued.				
Quarrying—Quantities—Cubic yards.....	18,383	17,633	19,321	55,337	Placing—				
Stripping.....	\$0.2955	\$0.3179	\$0.3327	\$0.3157	Operation of floating derricks.....	\$0.1432	\$0.1237	\$0.1111	\$0.1254
Drilling.....	.1026	.1370	.0907	.1094	Maintenance, floating derricks.....	.0181	.0527	.1849	.0877
Blasting.....	.2440	.2375	.1674	.2152	Operation, cranes.....	.1424	.1574	.1680	.1561
Loading.....	.1249	.1111	.1301	.1223	Operation, trains.....	.0754	.0822	.0777	.0784
Transportation.....	.1385	.1294	.1580	.1425	Dumping.....	.0082	.0064	.0078	.0075
Tracks.....	.2170	.2436	.3756	.2808	Maintenance of equipment.....	.1324	.2029	.0804	.1367
Loading on barges.....	.1365	.1475	.1480	.1440	Plant arbitrary.....	.1500	.1500	.1500	.1500
Power.....	.1182	.1233	.0918	.1106	Total.....	\$0.6697	\$0.7753	\$0.7799	\$0.7418
Maintenance of equipment.....	.8623	.4633	.5011	.6090	Trestles.....	\$0.0823	\$0.1110	\$0.1236	\$0.1059
Plant arbitrary.....	.3320	.3320	.3320	.3320	Tug service, miscellaneous.....	.0782	.0620	.0499	.0632
Total.....	\$2.5715	\$2.2426	\$2.3274	\$2.3815	Maintenance of equipment.....	.0281	.0542	.0244	.0350
Towing—					Division expense.....	.1487	.1400	.0897	.1253
Operation, tugs and barges.....	\$0.1599	\$0.2912	\$0.1573	\$0.2009	Total division cost.....	\$4.1794	\$4.3119	\$4.0043	\$4.1605
Maintenance of equipment.....	.0570	.2516	.0681	.1229	Administrative and general expense.....	.3855	.4244	.3748	.3942
Plant arbitrary.....	.3840	.3840	.3840	.3840	Total cost.....	\$4.5649	\$4.7363	\$4.3791	\$4.5547
Total.....	\$0.6009	\$0.9268	\$0.6094	\$0.7078					

PERMANENT POWER HOUSE—GATUN.

Table No. 9.

	Jan.	Feb.	Mar.	Total
Dry Excavation—Quantities—Cubic yards.....				
Clearing.....				
Drilling.....				
Blasting.....				
Loading.....				
Tracks.....				
Transportation.....				
Maintenance of equipment.....				
Plant arbitrary.....				
Division expense.....				
Total Division cost.....				
Administration and General expense.....				
Total cost.....				
Preparing Foundations—Quantities—cubic yards.....	250	30	89	369
Drilling.....	\$0.1783	\$3.9790		\$0.4443
Blasting.....	.0067	.2640		.0260
Loading by power.....	1.8533	1.4663	\$0.4573	1.4852
Loading by hand.....	2.4701	17.9447	7.3987	4.9169
Tracks.....		4.5700	3.2108	1.1460
Transportation.....	.4397			.2979
Maintenance of equipment.....	.7145	.7690	.1635	.5860
Plant Arbitrary.....				
Division expense.....	.2998	1.7287	.6382	.4976
Total division cost.....	\$5.0830	\$30.7217	\$11.8685	\$8.8041
Administrative and general expenses.....	.4368	3.4353	1.2810	.8843
Total cost.....	\$5.5198	\$34.1570	\$13.1495	\$9.6884
Masonry Substructure—Quantities—cubic yards.....	163	351	620	1,140
Cement.....	\$1.3343	\$1.2856	\$1.4597	\$1.3882
Stone.....	1.0894	.9552	.9946	.9960
Sand.....	1.4762	.5947	.3677	.4531
Forms.....	.3721	.3630	2.4125	1.6327
Mixing.....	.3845	.4648	.6931	.5787
Reinforcement.....	.0134			.0019
Placing.....	1.2332	1.1195	1.3876	1.2830
Coffer Dams.....	.1737			.0248
Maintenance of equipment.....	.2367	.3852	.4962	.4249
Plant arbitrary.....	.2540	.2540	.2540	.2540
Division expense.....	.2579	.1221	.1238	.1425
Total division cost.....	\$6.8254	\$5.5441	\$8.1892	\$7.1798
Administrative and general expenses.....	.3629	.2409	.5681	.4380
Total cost.....	\$7.1883	\$5.7850	\$8.7573	\$7.6178

Bold face type indicates credit.

CANAL



RECORD

Volume No. VI.

ANCON, CANAL ZONE, WEDNESDAY, JUNE 4, 1913.

No. 41.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

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Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Plans for Crossing the Canal.

The plan of crossing the Canal after its completion by means of a tunnel in the vicinity of Paraiso Junction, which was at one time given consideration, has been abandoned on account of the excessive cost, and a committee consisting of Mr. A. S. Zinn, chairman; Lieut. Frederick Mears, and Mr. W. G. Comber, has been appointed by the Chief Engineer to investigate and report on a plan for utilizing car floats as a means of communication between the east and west sides of the Canal after the removal of the dike at Gamboa. One of the locations, which will probably be considered in connection with this plan is that opposite Camp Elliott, where the work of making the approaches and preparing the recesses for receiving the boats, it is believed, could be accomplished without much difficulty.

Hydraulic Work on Slides About to Begin.

The hydraulic plant installed on the plain opposite Culebra for lightening the tops of the slides on either side of Gold Hill by sluicing material away from the Cut and into the valley in rear of the hill, as outlined in THE CANAL RECORD of April 16, 1913, is to be put into operation the latter part of this week. Pipeline connections with the main of the Union Oil Company at Paraiso should be completed on Thursday, and the 4,000-barrel fuel oil tank at the pumping station will be filled quickly, while the final adjustments are being made at the engine house. Damming the Obispo River nearby has backed up enough water to start with, and it is anticipated that during the rainy season there will be no lack of supply.

The operating organization for this work took charge on June 1. It includes one assistant engineer, one general foreman, one foreman, three shift foremen, one station engineer, three steam engineers, three booster-

pump operators, and four skilled laborers; a total of 17 "gold" men. The "silver" roll includes two clerks, one messenger, three shift foremen, seven oilers, four firemen, 12 nozzlemen; 38 artisans of various designations, with rates of pay ranging from 13 to 20 cents an hour; and 30 laborers at 13 cents an hour. The total number of "silver" men is 97, and the whole force is to include 114 men.

Washington House and Hotel Washington Consolidated.

The operation of the mess at the Washington House, the frame structure on Avenue de Paez, Colon, was discontinued on June 1, and 30-cent meals will hereafter be served at the new Hotel Washington. A portion of the veranda overlooking the ocean has been screened for this purpose from the area devoted to the *à la carte* service. The second and third stories of the Washington House building will be continued in use as bachelor quarters by employees of the Panama railroad.

Towboat "Exotic" to be Sold.

The stern wheel towboat *Exotic* has been appraised by the Board of Local Inspectors, and will be offered for sale. The vessel was purchased by the Isthmian Canal Commission from the firm of Pusey and Jones, Wilmington, Del., and cost \$25,493 at the builders' yards. It was shipped to the Isthmus knocked down, and by the time it was ready for service, its total cost was approximately \$40,000. It has been in service ever since its arrival in connection with the dredging operations in the Atlantic entrance. It was believed at one time that the boat might be used to advantage on Gatun Lake, but this necessity is not now apparent.

Awards for Motor Planer Equipment.

Five reversing motor planer equipments for operating metal-cutting planers in the new machine shop at Balboa, bids for which were opened under circular No. 766, have been ordered from the General Electric Company, at a total cost of \$5,620. Delivery is promised within 130 days from date of receipt of notice of award. The equipments are for driving the following planers:

Size of planer.	Maker.	Rated hp.
60 x 60" x 24"....	Niles-Bement-Pond Co....	30
49 x 62" x 17"....	Cincinnati Planer Co....	20
42 x 42" x 12"....	William Sullers and Co....	15
42 x 42" x 8"....	Cincinnati Planer Co....	15
33 x 33" x 10"....	Cincinnati Planer Co....	10

The equipment for each planer is to consist of one motor, one contactor control panel and case, one master switch, two field rheostats, one pendant switch, one circuit breaker and one coupling. The motors will be of the commutating type, suitable for coupling direct to the driving shaft; they will be wound for operation on a direct circuit, with a normal potential of 220 volts, and must have a speed range of from 250 to

1,000 revolutions per minute. The Commission will install the equipment, and will supply all conduit and exterior wiring, with the exception of 25 feet of wire with each pendant switch.

Changes in Union Oil Company's Pipeline.

In order to serve the Canal Commission's power plants on the west bank of the Canal until such time as they can be abandoned, the Union Oil Company's pipeline is being laid across the Cut at Bas Obispo, south of Gamboa dike, and also at Paraiso, near the former site of bridge No. 57½. As this pipeline will probably remain in service until about July 1, 1914, it is being buried below the bottom of the Canal, so as not to interfere with future dredging operations. The bottom of the Canal at these points will be 39 feet above sealevel, and the pipeline is being laid two feet lower, or at plus 37 feet. On May 7, the President signed a supplementary contract with the Union Oil Company to run until July 1, 1914. Under this contract, fuel oil may be purchased by the Canal Commission in amounts up to 100,000 barrels a month.

Parkway on E Street in Colon.

The Panama Railroad Company is placing a parkway on E street, Colon, extending from Second to Ninth streets. The parking extends 36 feet on either side of the street and is to be finished with a 4-foot concrete walk along which concrete benches will be placed at convenient distances. Each section of the park will be bordered with royal palm trees, a private donation, and there will be a low hedge of hibiscus plants on the inner sides, bordering on the railroad track. The beds will be planted with shade trees, crotons, high shrubs, and flowering bushes, including oleander, crepe myrtle, and residue, a perfumed tree introduced by the French and known to the natives as French forget-me-not. The work is being carried out under the direction of the Sanitary Department, at the expense of the railroad company.

Hay for Commission Animals.

Bids for furnishing 1,800,000 pounds of hay were opened in Washington on May 3, under circular No. 771-A. The lowest bid received was, as follows: Timothy, \$1.107 per hundredweight; upland prairie hay, \$1.06 per hundredweight; alfalfa, \$1.315 per hundredweight. An award was made at these prices for supplying 600,000 pounds of upland prairie hay, and 1,200,000 pounds of timothy, delivery to be made at the rate of 300,000 pounds each month, on the basis of two-thirds timothy and one-third prairie hay. As a comparison with previous prices paid, in September, 1911, an award was made for supplying 1,600,000 pounds of wheat and oat hay at \$1.24 per hundredweight, and 1,600,000 pounds of alfalfa at \$1.1125; in October, 1912, an award was made for supplying 1,200,000 pounds

of upland prairie hay at \$1.18 per hundred-weight, and 1,200,000 pounds of alfalfa at \$1.375 per hundredweight. Under the new bid the prices for both alfalfa and prairie hay are lower than in either of the two previous years.

Concrete Work in Locks and Spillways.

Concrete work in the Canal locks is nearly completed, the aggregate amount in place at the close of work on May 31, being 4,459,356 cubic yards.

A statement of the concrete laid in the three sets of locks for the Canal, and in Gatun and Miraflores spillways, as of May 31, follows:

GATUN LOCKS.		Concrete laid.
May 26.....	294	
May 27.....	258	
May 28.....	276	
May 29.....	316	
May 30 (Holiday).....		
May 31.....	50	
Total.....	1,194	
Previously reported.....	2,034,673	
Grand total.....	2,035,867	
PEDRO MIGUEL LOCK.		
May 26.....	54	
May 27.....	38	
May 28.....	2	
May 29.....	35	
May 30 (Holiday).....		
May 31.....	5	
Total.....	134	
Previously reported.....	921,024	
Grand total.....	921,158	
MIRAFLORES LOCKS.		
May 25.....	198	
May 26.....	36	
May 27.....	55	
May 28.....	70	
May 29.....	77	
May 30 (Holiday).....		
May 31.....	24	
Total.....	460	
Previously reported.....	1,501,571	
Grand total.....	1,502,331	
GATUN SPILLWAY.*		
May 26.....	32	
May 27.....	68	
May 28.....	32	
May 29.....	74	
May 30 (Holiday).....		
May 31.....	87	
Total.....	293	
Previously reported.....	226,518	
Grand total.....	226,811	
MIRAFLORES SPILLWAY.		
May 26.....	1,031	
May 27.....	1,129	
May 28.....	1,215	
May 29.....	1,264	
May 30 (Holiday).....		
May 31.....	1,270	
Total.....	5,909	
Previously reported.....	38,277	
Grand total.....	44,186	

*The figures for Gatun spillway include the concrete placed in the hydroelectric station, 235,000 cubic yards being the estimated amount required for both spillway and station.

Immigration to the Isthmus During May.

According to the figures of the quarantine service, the number of persons who landed at the port of Colon from foreign ports during the month of May was 4,553, consisting of 1,371 cabin, and 3,182 steerage passengers. The number of persons who embarked for foreign ports during the same period was 3,885, consisting of 1,979 cabin, and 1,906 steerage passengers. The number of persons who landed over those who embarked was 668. Two thousand three hundred and twenty-five of the persons arriving in steerage were from Jamaica and other West India islands; 313 were from Colombia, and 131 from

Costa Rica. The passengers arriving "in transit" numbered 1,552, consisting principally of people bound for the west coast of Central and South America, and tourists. This number is 1 779 less than in April, due largely to the falling off in tourist travel. One hundred and nine vessels arrived at Colon during May, as compared with 103 in April.

The number of persons who landed at the ports of Panama and Ancon during the month from foreign ports was 783, consisting of 584 cabin, and 199 steerage passengers. The number of persons who embarked for foreign ports was 451, consisting of 263 cabin, and 191 steerage passengers. The number of persons who landed over those who embarked was 329. The net immigration to the Isthmus during May was 997.

Fires in Colon and Cristobal.

Fire originating in a Chinese store on Hudson Lane, Colon, between Tenth and Eleventh streets, at 1 a. m. in the morning of June 3, resulted in the burning of six two-story frame buildings—four on Hudson Lane, and two on E street. The estimated loss on buildings was \$18,300, and on contents, \$5,000. Both the Cristobal and Colon fire departments responded to the first alarm.

At 1.50 a. m. on Wednesday, June 4, fire broke out in the Panama railroad paint shop at Cristobal, but was extinguished with damage of only \$15.

Tennis Tournament.

The Isthmian Tennis Association all-comers' tournament, in doubles, held at Ancon, on May 25 and 30, was won by J. T. Neely and Dr. Troy W. Earhart of Ancon. The summary follows:

D. T. Edwards and H. Bartholomew defeated J. B. Shropshire and J. C. Russell 6-3, 6-3.

B. C. Poole and G. M. Guerin defeated L. S. Rowe and E. F. Ohlson 6-8, 6-3, 6-2.

J. T. Neely and Dr. Troy W. Earhart defeated D. T. Edwards and H. Bartholomew 6-4, 6-1.

J. W. Ross and A. G. Snyder defeated J. I. Kuhn and E. W. Tupper 6-4, 7-5.

A. C. Fechtig and C. E. Nevius defeated R. W. Hart and L. H. Farquharson 6-1, 6-3.

J. T. Neely and Dr. Troy W. Earhart defeated B. C. Poole and G. M. Guerin 6-4, 6-3.

A. C. Fechtig and C. E. Nevius defeated J. W. Ross and A. G. Snyder 6-3, 7-5.

J. T. Neely and Dr. Troy W. Earhart defeated A. C. Fechtig and C. E. Nevius 8-6, 6-1.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry for the week ending May 31:

DATE.	Cubic yards.	Hours worked
May 26.....	541	2.05
May 27.....	1,800	4.40
May 28.....	1,885	6.55
May 29.....	2,841	7.50
May 30.....	Holiday	
May 31.....	1,832	7.05
Total.....	8,899	28.35

An unknown white man was found dead along the railroad track, near El Diablo, on Monday, May 26, having evidently been struck by a train. He had no papers or other articles on his person that would lead to his identification. A description of him has been sent out by the police department.

SOCIAL LIFE OF THE ZONE.

Church Notes.

The Rev. H. R. Carson of the Panama Mission of the Episcopal Church, has returned from his annual leave of absence. He has been appointed chaplain of Ancon Hospital, and of St. Luke's chapel; and, in addition, will have charge of St. Paul's church, Panama, St. Mary's church, Empire, and supervision of St. James' church (West Indian) in the same village. A schedule of services for the mission has been arranged, as follows:

St. Luke's, Ancon—Divine service with holy communion at 10 a. m., on the first Sunday in each month; holy communion at 7 a. m., and morning prayer at 10 a. m., on the second Sunday; divine service, with holy communion at 10 a. m., on the third Sunday; holy communion at 7 a. m., and morning prayer at 10 a. m., on the fourth Sunday. The Sunday school will meet at 9 a. m. every Sunday. On the second Sunday in each month, instruction on missions will be given, and the offering for that day will be used for mission work in the church.

St. Mary's church, Empire—Evening prayer every Sunday evening at 7 o'clock; when there is a fifth Sunday in the month, there will be a celebration of the holy communion at 7.30 a. m.

Culebra Commission chapel—Celebration of holy communion on the third Sunday in each month at 7 a. m.

St. Paul's church, Panama—Holy communion on the first and fourth Sundays in each month at 6 a. m. Morning service every Sunday at 11 a. m. Baptisms and marriages in the church from 12 noon to 3.45 p. m.

Rev. Mr. Carson will be at St. Luke's chapel every day from 8 to 9 a. m., and from 2 to 3 p. m.

The Altar Society of St. Ferdinand's church, Empire, will hold a euchre party in the parish house on Saturday evening, June 14. Hereafter, a similar entertainment will be held on the second Saturday evening in each month. The men's club of the church will unite with the society in carrying out the plans for these parish events. The proceeds will be for the church treasury and for mission work.

Thirteen members of the Pan-Presbyterian Congress, which has just closed in Atlanta, Ga., were visitors to the Isthmus, arriving at Colon, on Thursday, May 29. Dr. W. E. Biederwolf, an eminent Presbyterian evangelist, of Chicago, Ill., was in the party, and held mission meetings in the Commission chapel at Gatun, from Thursday to Sunday. On Sunday morning, he preached in the Cristobal Union church, returning to Gatun for the evening meeting. During the mission, the congregations were very large, the maximum being reached on Sunday evening, when there were 400 present. Dr. Biederwolf left Colon on Monday for a trip up the coast, expecting to return to sail for New Orleans on Thursday, June 5.

Case of Francisco Zaldivar.

The Supreme Court of the Canal Zone, on May 28, affirmed the decision of the lower court in the case of Francisco Zaldivar, the Panamanian, who was tried and found guilty of murder in the first degree, Justice Jackson dissenting. The date for the prisoner's execution, as fixed by the lower court, is July 11, 1913.

CANAL MEDAL SECOND BAR LIST.

Below are published the names of American employees of the Isthmian Canal Commission, who completed six years of continuous service on the Isthmus during the twelve months ending December 31, 1912, and are, in consequence, entitled to receive a second service bar for their Canal Medal. The date shown opposite each name is that on which the bar service began.

The list is now published in order that it may be carefully checked by those interested. Any omissions, errors in spelling of names, or in the dates from which service is reckoned, should be promptly reported to the office of the Chairman, at Culebra, for correction.

The heads of divisions are requested to check carefully their lists of American employees on the silver rolls, and report any omissions on the second bar list to the above office.

Names of employees of the Isthmian Canal Commission, entitled to a third bar, and employees of the Panama Railroad Company, entitled to medals or bars, will be published in subsequent issues.

Medal and bar service begins at the time of an employee's arrival on the Isthmus; not at the time of his departure from the United States.

Name.	Date.	Name.	Date.	Name.	Date.	Name.	Date.	Name.	Date.
1910.									
Russell, William G.	Jan. 1	Clark, Edward B.	Mar. 31	Farrow, William E.	June 9	Garvin, Patrick J.	Aug. 13	Twombly, Henry H.	Sept. 17
Andrews, Isaac H.	Jan. 6	Taylor, William.	Mar. 31	Morley, John E.	June 9	Ramsey, George W.	Aug. 13	Weidman, Frank.	Sept. 17
Huff, Fred L.	Jan. 6	Mantooth, A.	Apr. 1	Nevius, Chester E.	June 9	Driscoll, Michael J.	Aug. 14	Gorham, Luzella G.	Sept. 18
Small, William H.	Jan. 7	Reeder, Dennis, F.	Apr. 8	Randall, Ortez G.	June 9	Shingley, L. M.	Aug. 14	Willson, James C.	Sept. 20
Heinrich, Amandus.	Jan. 13	McLean, Andrew L.	Apr. 10	Wolverton, David R.	June 9	Simonson, Charles.	Aug. 16	Delano, Fred E.	Sept. 21
Howard, Robert C.	Jan. 13	Martin, William M.	Apr. 10	Young, Thomas H.	June 9	Brown, Walter G.	Aug. 17	Babbitt, Richard W.	Sept. 23
McCauley, Daniel J.	Jan. 13	Peterson, William B.	Apr. 10	Gorham, Frederick L.	June 15	Kimball, George W.	Aug. 18	Carter, William.	Sept. 23
McCormack, William T.	Jan. 13	Lewis, Fitz J.	Apr. 11	Jury, Frank J.	June 15	Mack, Frank.	Aug. 18	Lotz, Henry W.	Sept. 23
Tannehill, John W.	Jan. 13	Hart, Henry A.	Apr. 12	Loulain, James A.	June 15	Parmeter, Frank S.	Aug. 18	Watson, William.	Sept. 23
Jones, Christopher G.	Jan. 15	Craig, Robert F.	Apr. 15	Richmond, John.	June 15	Rounsevell, Guy K.	Aug. 18	Williamson, Thomas G.	Sept. 23
Woodside, James.	Jan. 16	Blake, Arthur O.	Apr. 16	Robinson, Rennie R.	June 15	McCullum, Chas. S.	Aug. 20	Roderick, Charles.	Sept. 24
Holleman, Marshall S.	Jan. 19	Watson, George W.	Apr. 18	Waldon, Frank K.	June 15	Curran, Taylor T.	Aug. 23	John, William W.	Sept. 28
Albin, Walter.	Jan. 20	Fuertado, Joseph P.	Apr. 20	Burnham, Howard D.	June 20	Scnwartzenholzer, Jos.	Aug. 24	Koerner, Charles F.	Sept. 28
Johnson, Nelson R.	Jan. 20	Albrecht, John E.	Apr. 21	French, Marvin L.	June 20	Shippee, Arthur B.	Aug. 24	Nolan, Matthew.	Sept. 28
Rabbitt, David F.	Jan. 20	Mahoney, Patrick J.	Apr. 21	Wertz, Harry C.	June 20	Toont, Beverly B.	Aug. 24	Pickett, Ira W.	Sept. 28
Herz, Simon.	Jan. 22	Reed, Edward L.	Apr. 21	Lambert, Clarence K.	June 21	Townsend, Lester A.	Aug. 24	Snediker, Randolph E.	Sept. 28
McGuigan, Joseph J.	Jan. 23	Sergeant, William R.	Apr. 21	Buckholdt, Joseph A.	June 24	Naegele, Ferdinand.	Aug. 28	Craig, James G.	Oct. 2
Hammond, Robert S.	Jan. 24	Siggins, Michael.	Apr. 21	Dawson, George H.	June 24	Grant, William S.	Aug. 29	Owen, Brady R.	Oct. 2
Luedtke, Charles L.	Jan. 25	Wilson, Charles M.	Apr. 21	Dickinson, Albert M.	June 24	Guintner, John H.	Aug. 29	Roche, Paul E.	Oct. 2
Gallagher, Edward L.	Jan. 26	Conner, Frank W.	Apr. 26	McNamara, Gordon G.	June 24	Howe, Herbert H.	Aug. 29	Lynn, Lewis M.	Oct. 9
Graver, Fleetwood.	Jan. 26	Grant, Ward E.	Apr. 26	Moore, Edward.	June 24	Martin, James E.	Aug. 29	Parrott, Nettleton.	Oct. 9
Rose, Charles.	Jan. 29	Krueger, Charles J.	Apr. 26	Smith, Julian C.	June 24	O'Mealey, Bertrand J.	Aug. 29	Sprouse, Frances P.	Oct. 9
Harris, Charles H.	Feb. 1	Van Fleet, Minnie.	May 2	Taber, Charles S.	June 24	Rowley, William.	Aug. 29	Pelton, Henry.	Oct. 10
Stevens, George H.	Feb. 1	Broderick, Timotny J.	May 4	Kennedy, Arthur W.	June 25	Schaefer, Joseph.	Aug. 29	Walton, George E.	Oct. 10
Wiggins, Charles.	Feb. 4	Chandler, Earl H.	May 4	Mackintosh, Joseph.	June 30	Wilde, Abner P.	Aug. 29	Hyde, William H.	Oct. 14
McCullough, Archie.	Feb. 5	Woodman, Charles L.	May 4	Westburg, John E.	June 30	Gallagher, Harry J.	Aug. 30	Macneil, Thomas A.	Oct. 14
Vanderburgh, C. L.	Feb. 5	Ekedahl, Olof.	May 5	Whipple, C. Earl.	June 30	King, Milton P.	Sept. 3	Peterson, Julius M.	Oct. 14
Whitehead, Wilbur W.	Feb. 5	Sheibley, Firmer H.	May 7	Phillips, Jack.	July 2	Conlan, Archie B.	Sept. 4	Thaxton, Cullen D.	Oct. 14
Boyle, Edward M.	Feb. 9	Smith, Alfred.	May 7	Deneen, Jack.	July 4	Connell, Charles.	Sept. 4	Reynolds, William T.	Oct. 15
Fisher, Allen D.	Feb. 9	Campbell, George.	May 10	Sturdivant, Roy H.	July 4	Dombrowsky, Alex.	Sept. 4	Beetham, Charles H.	Oct. 17
Pennell, George B.	Feb. 9	Cooper, John C.	May 11	Whaler, John W.	July 4	ander.	Sept. 4	Byram, Fred B.	Oct. 18
Poole, Bernell C.	Feb. 9	Dorsey, William.	May 11	Coyne, John F.	July 7	Gilliam, Mace H.	Sept. 4	Erdman, Daniel J.	Oct. 18
Roessner, William E.	Feb. 9	Dozier, William T.	May 11	Peterson, Walter.	July 9	Gilmore, Maurice E.	Sept. 4	Sickler, Albert F.	Oct. 18
Wahlquist, Oscar.	Feb. 9	Edmonson, Alonzo.	May 11	Bradney, Madison F.	July 10	Jorgensen, Einar L.	Sept. 4	Quinby, Benjamin C.	Oct. 19
Wood, Benjamin F.	Feb. 10	Lewis, John F.	May 11	Gayle, Edmund D.	July 10	McCombs, William B.	Sept. 4	Casper, Jas. P.	Oct. 21
Carprow, James M.	Feb. 12	McCoy, William M.	May 11	Gilbert, James J.	July 10	McLaughlin, Thomas C.	Sept. 4	Hallett, Charles L.	Oct. 21
Phillips, Charles E.	Feb. 14	Polk, William F.	May 11	McCormick, Edward B.	July 10	Page, Harry F.	Sept. 4	Lucey, James W.	Oct. 21
Brown, Peter B.	Feb. 15	Roberts, Frank R.	May 11	Stocchini, Thomas F.	July 11	Per Lee, Charles A.	Sept. 4	McRobert, William W.	Oct. 21
Daly, Charles C.	Feb. 15	Taylor, Willoughby M.	May 11	Carroll, John M.	July 12	Sarvey, Wesley M.	Sept. 4	Morris, Webster.	Oct. 21
Kunce, Oren H.	Feb. 15	Whickham, Clarence A.	May 11	Brown, George.	July 14	Veen, James T.	Sept. 4	Perkins, Samuel M.	Oct. 21
Thompson, Thomas C.	Feb. 15	Montgomery, Henry.	May 11	Hughes, William E.	July 14	Rosse, H. Theodore.	Sept. 5	Ploessel, Emanuel M.	Oct. 21
Kuller, Benjamin F.	Feb. 15	Davies, Richard M.	May 15	James, William McC.	July 14	Illia, John D.	Sept. 5	Zinn, A. S.	Oct. 21
O'Leary, Joseph.	Feb. 21	Hartley, Edwin B.	May 15	Nelson, Richard M.	July 14	Jones, Annie L.	Sept. 5	Spencer, Alfred E.	Oct. 23
Stoddard, Charles.	Feb. 21	O'Haire, William J.	May 15	Deeds, Edward F.	July 16	Stevens, Masters B.	Sept. 5	Azima, Michael C.	Oct. 24
Waters, Albert V.	Feb. 21	Winds, William N.	May 15	Paris, Joseph.	July 17	Warner, John F.	Sept. 5	Chambers, William R.	Oct. 24
Allyn, John C.	Feb. 22	Wheeler, Charles P.	May 17	Beard, Frederick S.	July 19	Barnett, James C.	Sept. 8	Dickinson, William E.	Oct. 24
Bentley, Enoch W. A.	Feb. 22	Brown, Daniel C.	May 21	Brown, Warren J.	July 19	Catto, John F.	Sept. 8	Griffin, John J.	Oct. 24
Farrell, Fred F.	Feb. 22	Gayer, William C.	May 21	McLean, William P.	July 19	Luckey, John J.	Sept. 8	Myers, Forrest J.	Oct. 24
Ferguson, Robert N.	Feb. 22	Girdner, Harry.	May 21	Thomas, Trevor.	July 19	McCollough, Derrill H.	Sept. 8	Stover, David Z.	Oct. 24
Gould, Marcus L.	Feb. 22	Heckman, Henry L.	May 21	Thompson, Ernest R.	July 19	McNutt, Edward E.	Sept. 8	Swain, Bernie E.	Oct. 24
Kenney, Daniel.	Feb. 22	Lowe, George.	May 21	Keefe, John H.	July 20	Metcalf, Jesse C.	Sept. 8	Taylor, Richard G.	Oct. 24
Morrison, William F.	Feb. 22	Richmond, Vena E.	May 21	Dibowski, Charles J.	July 25	Pierson, Glen H.	Sept. 8	Bath, Ed. G.	Oct. 26
Steward, William S.	Feb. 22	Stoehr, George P.	May 21	Logan, Orren.	July 25	Rutherford, William T.	Sept. 8	Halligan, Thomas.	Oct. 26
Stubner, Charles.	Feb. 22	Clark, F. P.	May 24	Sexton, Charles B.	July 25	Strotz, Charles M.	Sept. 8	Kittel, Charles.	Oct. 26
Barton, Robert C.	Feb. 26	Deer, Edgar H.	May 26	Smith, LeRoy.	July 25	Curney, Frank R.	Sept. 9	McDonald, Hugh M.	Oct. 26
Cook, Charles B.	Feb. 26	Duncan, Samuel.	May 26	Webster, Lewis.	July 25	Lewis, Clifford.	Sept. 10	Marsh, William H.	Oct. 26
Hull, William G.	Feb. 26	Kemp, James.	May 26	White, James.	July 25	Trask, H. R.	Sept. 10	Powers, Joseph J.	Oct. 26
Alexander, Burchard B.	Feb. 28	Luther, Arthur T.	May 26	Durand, Louis A.	July 30	Walraven, Francis W.	Sept. 11	Rankin, Alvin M.	Oct. 26
O'Connor, Charles.	Mar. 1	McClinton, Joseph L.	May 26	Henkle, Benjamin F.	July 30	Eck, John.	Sept. 13	Seeb, John F.	Oct. 26
Taber, John A.	Mar. 2	McCormick, Joseph.	May 26	Hunter, Abel A.	July 30	Lewis, Charles L.	Sept. 13	Westcott, Fred M.	Oct. 26
White, Frank D.	Mar. 5	Stewart, Malcolm.	May 26	Persons, Charles L.	July 30	Perry, Walter L. G.	Sept. 13	Woodman, Frank R.	Oct. 26
Harrison, T. William.	Mar. 6	Bruner, Jasper H.	May 31	Slater, Arthur A.	Aug. 2	Pinney, Aurelian H.	Sept. 13	Graham, John.	Oct. 30
La Rock, Herbert.	Mar. 6	Julien, Clark.	May 31	Brown, Elizabeth C.	Aug. 5	Weber, Harry E.	Sept. 13	Graham, William F.	Oct. 30
Hanson, Henry C.	Mar. 8	Kane, John H.	May 31	Matchette, J. Marion.	Aug. 5	Humphrey, Walter J.	Sept. 15	Hayes, Harry S.	Oct. 31
Grier, Samuel Jr.	Mar. 10	Keefer, Philip B.	May 31	Bath, Charles H.	Aug. 9	Coffey, N. E.	Sept. 16	Miller, Jacob.	Oct. 31
McKenna, Roy M.	Mar. 12	Walker, Alfred J.	May 31	Bradley, William E.	Aug. 9	Barnes, William I.	Sept. 17	Brundage, Fred H.	Nov. 2
Dohrmann, Henry W.	Mar. 17	Walling, Clifford T.	May 31	Miller, Joan B. Jr.	Aug. 9	Bridges, Harry L.	Sept. 17	Chelf, Fielding M.	Nov. 2
Fechtig, Alexander C.	Mar. 17	Gallagher, William P.	June 5	Million, George.	Aug. 9	Foster, William F.	Sept. 17	Erdman, Roger S.	Nov. 2
Gilmore, John E.	Mar. 17	Lawlor, William A.	June 5	Sommerville, Robert.	Aug. 9	Morris, George.	Sept. 17	Haynes, John M.	Nov. 2
Gibson, William C.	Mar. 26	Chute, Frank E.	June 9	Thompson, Charles W.	Aug. 11	Roe, Martin.	Sept. 17	Pendry, Charles A.	Nov. 2
Brady, Clyde.	Mar. 31	Clifton, Robert B.	June 9	Watts, George H.	Aug. 11			Piper, William T.	Nov. 2

(To be continued.)

BUFFERS TO PROTECT SHIPS.

Approach Walls at Locks to have Crib Fenders for Vessels which May Collide with Them.

A vessel approaching one of the Canal locks for passage will make its way toward the center guide wall, which extends over a thousand feet from the guard gates, to be taken in tow by the electric locomotives. In approaching the wall the ship may be so shifted by wind or currents as to be in danger of ramming against the end of the wall and damaging its hull. For protection against such injury, special timber buffers, wedge-shaped, are to be built in crib construction at the ends of the walls. The fenders for the sides of the approach walls and flare walls were described in *THE CANAL RECORD* of October 11, 1911; they consist of two rows, seven feet six inches apart, of 12 by 16-inch stringers, the lower of which will be about a foot above mean water level.

If a vessel strikes slantingly against a face of the wedge it will normally veer off. If the prow strikes the buffer head-on, it will plow into the timbers and the latter will suffer the greater part of the damage. Their comparatively elastic resistance will normally bring the vessel to a stop without serious injury.

The buffers for the six guide walls of the three sets of locks will be generally similar in construction, but their supports will vary according to conditions. Each buffer will project 65 feet from the end of the wall. The wedge part will be 42 feet deep, with each face about 50 feet long. In rear of the wedge, cribbing will be built on either side to extend back about 23 feet and embrace the end of the guide wall. The crib construction will be a facing around the interior support and will be about five feet thick. It will consist of 12 by 12-inch timbers, laid in the style of a log cabin, and the face will be made solid, with about seven feet overhang, by the interposition of extra timbers laid lengthwise.

Three types of supports will be used, determined by the degree of cohesiveness of the earth at the ends of the walls, and whether the surrounding water is to be fresh or salt.

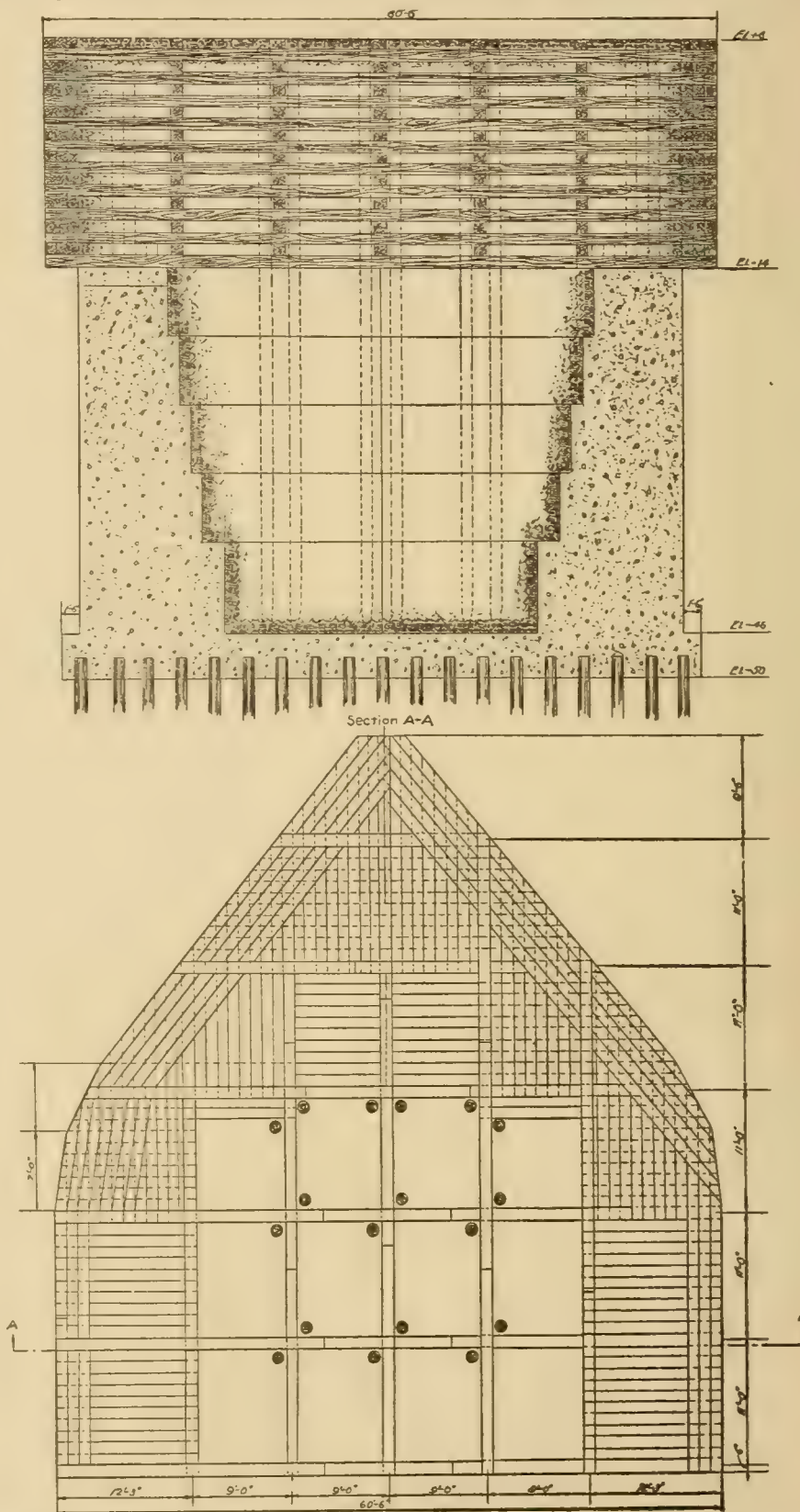
Lower ends of Gatun Locks and Miraflores Locks.—The cribs at the ocean ends of these locks are the ultimate type to which the others will eventually conform. The crib work will rest on a firm base of mass concrete, and be anchored by upright timbers to prevent side thrusting. The base will be a wall 62 feet high, following the projection of the crib. The wall will be 13 feet thick at the base, vertical on the outside, but stepped-in on the interior to a thickness of eight feet at the top. The plan and elevation of wall and surmounting crib are shown in Sketch A. At Miraflores, the base will rest on solid rock; at Gatun, the material at the outer end of the lower approach wall is soft mud in a layer as deep as 60 to 70 feet above rock, and the base for the crib will rest on piles, as the greater part of the approach wall itself does. The piles will be driven to rock, on 3-foot centers, and surmounted over all by a binding cap of concrete, three feet thick.

Upper ends of Gatun and Miraflores Locks.—The upper approach walls of these locks rest on piles and concrete caissons, respectively, sunk to rock through firm earth, which has considerable cohesiveness. On this kind of earth it is feasible to support the crib construction on four rows of piles, driven

on 3-foot centers. The crib will be held stationary, by galvanized steel bolts passing through the piles (Sketch B). The whole structure will be firm, but resilient, able to "give" to the impact of a vessel, much like the dolphins alongside a dock. When the tops of the piles above the water surface have rotted they will be sawed off and the crib

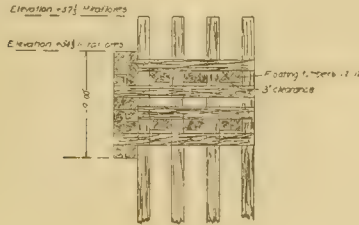
will be built and anchored upon piles wholly submerged.

Upper and lower ends of Pedro Miguel Lock.—Both center guide walls rest on rock, and this firm base extends in both directions. A reinforced concrete wall will be built (Sketch C) following the projection of the cribbing, to a height of 20 feet above the



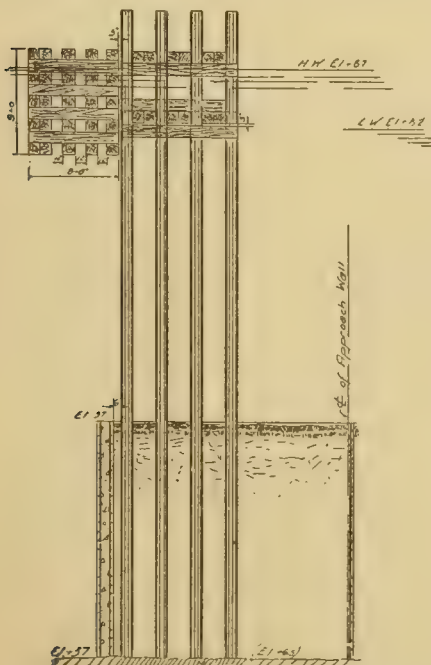
A—PLAN AND ELEVATION OF FENDER CONSTRUCTION AT LOWER APPROACH WALLS, GATUN AND MIRAFLORES. (FOUNDATION PILES OMITTED AT MIRAFLORES)

Canal bottom. The walls will be 18 inches thick, reinforced with square twisted bars of steel. They will be tied together by bars embedded in concrete cross walls. The interior of the box will thus be divided into cells, four of which will be rectangular in plan and four triangular. The cells will be filled with earth, into which piles will be driven to anchor a floating crib. The crib



B—SUPPORT AT END OF UPPER APPROACH WALL, MIRAFLORES.

will move up and down freely with the fluctuations of the water surface. If a crib is struck by a vessel it will transmit the blow to the piles, and the combined structure through its elastic resistance will minimize the damage done to the vessel. When the parts of the piles exposed to air have rotted the piles will be sawed off below the water sur-



C—ARRANGEMENT AT UPPER APPROACH WALL, PEDRO MIGUEL.

face, and cribs will be built and anchored upon them.

The construction of the boxes at the ends of the two approach walls of Pedro Miguel Lock and the base at the end of the lower approach wall at Gatun has been completed. Contract has been awarded through the Washington office of the Commission to W. R. Grace and Company for furnishing 912,000 feet, board measure, of 12 by 12-inch yellow pine, or Douglas fir lumber. Bids have also been invited on the requisite quantities of drift bolts, anchor bolts, etc., heavily galvanized. Of the lumber, 636,000 feet will be creosoted, for use where exposed alternately to water and air, and in sea water.

PERSONAL.

Col. Geo. W. Goethals, accompanied by Mrs. Geo. R. Goethals, sailed for New York on Tuesday, June 3, on the steamer *Pastores* of the United Fruit Company's service.

Mr. Joseph Bucklin Bishop, accompanied by his wife and daughter, sailed for New York on the *Ancon* on Tuesday, June 3, on his annual leave.

Justice Thomas E. Brown, Jr., accompanied by Mrs. Brown, sailed on the *Panama* on Sunday, June 1, on his annual leave of absence.

Justice William H. Jackson, accompanied by his family, will sail for the United States on the *Allianca*, which is due to leave Cristobal on Saturday, June 7.

Mr. J. A. Smith sailed for New Orleans on the *Heredia* of the United Fruit Company's service, on Saturday, May 31.

Dr. C. A. Hearne, quarantine officer at Colon and Cristobal, sailed for the United States on Sunday, May 22, on vacation leave.

Tramways Nearly Ready for Operation.

The delay in operation of the new Panama-Ancon-Balboa tramways system has been due to the nonreceipt of cars. The first shipment of these cars, three in number, is due to arrive on Thursday of this week, and, hereafter, two will be shipped from the United States each week until the entire 15 has been received. The cars are of wooden body, single-truck type, and cost about \$6,000 each. The two rotary converters for transforming the current from the Miraflores power plant arrived last week and are in position, so that construction work is now practically completed. The local system will be under the same management as that of the Costa Rica Electric Light and Traction Company of San José, with Mr. W. N. Brand in charge of both enterprises. A representative of the consulting engineer for the tramways company has been engaged during the past week in examining the system, and arranging for liquidation of the contract under which Messrs. R. W. Hebard and Company undertook to complete the system ready to operate.

Notice to Mariners.

COLON, R. P., June 1, 1913.

Information has been received from the commander of the West India and Panama cable ship *Henry Holmes* that there will be, until further notice, "Telegraph buoys" in the following named position, namely: Lat. 11° 50' N. and Long. 78° 50' W. These buoys will be in the track of vessels plying between Colon and Jamaica, and should be given a wide berth. J. St. C. HUNT,

Port Captain.

FOURTH OF JULY EVENTS.

Program Outlined for Athletic and Aquatic Contests.

The following tentative program of field and aquatic athletic events contemplated for the Fourth of July celebration at Cristobal is published for the information of prospective entrants:

FIELD EVENTS.

1. 100-yard low hurdles
2. Shot put
3. Boys' 75-yard dash
4. 100-yard dash, preliminaries and semi-finals.
5. 880-yard run
6. Running high jump.
7. 100-yard dash, finals.
8. 440-yard run.
9. Running broad jump.
10. Wall-scaling contest.
11. Boys' relay.
12. Pole vault.
13. Potato race.
14. Tug-of-war.
15. 220-yard dash.
16. One mile relay.
17. Marathon race. This will start at Colon Hospital gate, thence down the Colon Beach road to Christ Church, thence down Bolivar street to Eleventh street, up Eleventh street into Cristobal, and along Palm avenue to finish line in front of building No. 2, Cristobal Point. Total approximate distance of race course, one and three-quarter miles.

Entry blanks may be procured at the different Commission clubhouses within a few days. Entries, and communications regarding entries, should be addressed to Assistant Secretary Woolworth of the Gatun Y. M. C. A., who will act as clerk of the course. Mr. C. C. Carr of Empire is chairman of the subcommittee on athletic events

AQUATIC EVENTS.

1. 50-yard swimming race.
2. 100-yard swimming race.
3. 1-mile swimming race.
4. 200-yard relay race
5. Fancy diving contest.
6. Form dive.
7. 1-mile paddling canoe race.
8. 50-yard ladies' swimming race.
9. 50-yard boys' swimming race.

There will be exhibition drills by the Tenth Infantry and the United States Marine Corps, wall-scaling contest, equipment races, etc.

The Canal Zone fire department will also participate in the celebration.

TENNIS TOURNAMENT.

The tennis tournament will be held, as follows:

June 15, 23, and 30—Preliminaries, in singles and doubles, to be played at Ancon.

July 4—Finals in singles at Cristobal, at 10 a. m.

July 4—Finals in doubles at Cristobal, at 2. 30 p. m.

An entrance fee of 25 cents will be charged. Entries close on Wednesday, June 11, and are to be forwarded to Mr. H. Bartholomew, Pedro Miguel, C. Z.

A new edition of the Manual of Information regarding employment for service on the Isthmus, with certain revised specifications, will be issued from the Washington office of the Commission about June 15.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The moving picture schedule for the week June 9 to 14 is, as follows: Monday, Gatun; Tuesday, Gorgona; Wednesday, Culebra; Thursday, Empire; Friday, Cristobal and Porto Bello; Saturday, Corozal.

CULEBRA

Dr. Frederic Poole of Philadelphia gave a talk on the "Chinese revolution and the humor of the Chinese written language," illustrated by chalk on blackboard, on Tuesday evening, May 27. Dr. Poole was for 10 years a missionary in China and more recently spent seven months there taking moving pictures. He is also a personal friend of Dr. Sun Yat Sen. On the excursion of May 30, Dr. Poole joined the party at Gamboa and made moving pictures of the Canal through the Cut and the Pacific entrance. A basket lunch was eaten on the train and lemonade was served.

High scores for the week in duckpins were, as follows: DeCora 103, 103, 109; Kiernan 100, 100; Johnson, C. J., 101; Leonard 100; Anderson 102, 106; Case 102.

High scores for the week in bigpins were, as follows: Warner 223, Johnson 200; Hobbs 200.

All interested in a tenpin tournament are requested to sign their names to the poster in the bowling alley.

EMPIRE.

On Sunday evening, June 1, about 300 people heard Dr. Poole give his second lecture on "Old China and the Great Wall." Special music was furnished by Miss Cervera of Panama.

An invitation duckpin bowling tournament was held on May 30, in which men from Cristobal, Gatun, Gorgona, Culebra, and Corozal took part. There were 61 entries in all. The results were:

Singles—First, Huson of Empire, score 304; second, Wurster of Gatun, score 297; third, Herrington of Cristobal, score 288.

Doubles—First, Pinney and Rodeghiero of Empire, score 564; second, Graham and Diedrich of Empire, score 555; third, Sims and King of Gorgona, score 553.

High single score was made by Wurster of Gatun, score 111; he also made high score for six games, score 578, an average of 96 1/3 per game.

Fifty-eight new library books have been placed in the library.

The play, "She stoops to conquer," will be given by the Canal Zone high school on Monday evening, June 9.

GORGONA.

Two extra reels were shown at the motion picture entertainment on May 27. Special music was furnished by Mrs. Kramer, who sang several solos, and Mr. and Mrs. Kramer, in a duet.

The debating club postponed its meeting on account of the concert given by the Lyon company.

The Gorgona men are training steadily for the celebration on the fourth of July.

The gymnasium classes meet twice a week. The times for meeting are Tuesday and Friday nights. There is room in the classes for more, and men are urged to join. A special class has been organized to meet three times a week from 5.10 to 6.30 p.m. for the purpose of playing volleyball, and other games. There are now 12 members enrolled. The teams are being organized for a special contest, and will be ready to meet any other on the Isthmus.

The Gorgona indoor baseball team defeated Gatun at Gorgona on Saturday evening by a score of 37 to 7. Following was the lineup:

Gorgona—J. Ridge, C. Sims, Clements, Christensen, S. Ridge, Herring, Johnson.

Gatun—Roberts, Caruthers, Wright, Stevens, Duer, Mathers, Carter.

Umpire—Dickson. Linesman—Emery.

Dr. Frederick Poole gave an interesting lecture on the humor of the Chinese and their language. He was requested to make a return engagement.

CRISTOBAL.

Miss Anais Maria Cervera gave a number of piano selections, and Mr. S. P. Verner gave a lecture on the cannibals and pigmies of Central Africa, at the meeting of the "Forum," on Wednesday evening, May 28.

A return engagement of the Mary E. Lyon Concert Company will be given on June 11. This will be the last of the United States entertainments for some time. The company will give an entirely new program.

The next number in the series under the direction of the "Forum" will be a lecture on the "Humor of the Chinese written language," by Dr. Frederic Poole, on Friday, June 6. Judging from the large houses that have listened to Dr. Poole at other points, this will prove

an interesting event for the Cristobal people. The lecture will be illustrated by chalk on blackboard.

COMMISSARY DEPARTMENT.

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Cold Storage.

Prices of cold storage supplies remain as published last week, with these exceptions:

Eggs, per dozen, 27 cents; half-dozen, 14 cents;
Butter, creamery special, per pound, 34 cents;
Cucumbers, per pound, 8 cents;
Squash, per pound, 4 cents.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, and Panama Railroad Company, arrived at the ports of Cristobal and Colon, during the two weeks ending May 31:

Carrillo, May 18, from New York, with 200 pieces car wheels, 14 barrels journal bearings, Mechanical Division; 49 pieces structural steel, Administration building; 74 barrels paint, 127 cases soap, 257 coils Manila rope, 12 cases hardware, for stock.

Cuban, May 18, from Liverpool, with 19 pieces dredge parts, 6 packages cable and parts, for Sixth Division.

Niederwald, May 18, from Hamburg, with 12 cases valve machinery, for First Division.

Cartago, May 19, from New Orleans, with 70 pieces piling, 9,266 pieces lumber, 278 pieces cross-ties, 1,090 bales alfalfa hay, 4 crates ranges, for stock; 1,204 pieces lumber, 6 reels steel cables, 84 tons pig iron, Mechanical Division; 35 pieces cast iron pipe, Fifth Division.

Prins Joachim, May 19, from New York, with 50 packages switches, 12 cases hardware, for stock.

Advance, May 20, from New York, with 174 packages springs, 129 barrels silica sand, 45 kegs bolts, 200 pieces car springs, 110 pieces car castings, 20 sacks car castings, Mechanical Division; 9 barrels insulators, 175 cases electrical material, 58 cases machinery, First Division; 233 cases candles, 600 bundles tie plates, 54 pieces bolted frogs, 334 bundles tubes, 130 kegs nails, 89 coils wire, 83 kegs washers, 22 cases rubber hose, 100 bundles steel bars, 31 crates handles, 45 cases household goods, 4,151 pigs pig iron, for stock; and a miscellaneous cargo, the whole consisting of 7,240 packages, weighing 500 tons.

Santa Maria, May 21, from New York, with 10 crates sheet copper, Fortifications; 25 reels copper wire, First Division; 174 pieces structural steel, Administration building; 35 crates steel doors, Panama Railroad Company; 300 pieces car wheels, Mechanical Division; 12 cases valve machinery, 10 cases electrical material, First Division; 14 cases yellow metal, 40 bundles scoop shovels, 146 bundles bar iron, for stock.

Abangarez, May 22, from New Orleans, with 116 pieces lumber, 275 tons pig iron, Mechanical Division; 99 pieces piling, 35 pieces steamshovel castings, 34 pieces cast iron pipe, for stock; 8 cases insulators, for First Division.

Pennsylvania, May 24, from San Francisco, with, 12 cases solder, 5 cases rubber hose, for stock.

Ancon, May 24, from New York, with 1,632 barrels sand, 4,983 pieces pig iron, 250 pieces castings, 388 sacks crushed silica rock, 5 reels steel rope, for Mechanical Division; 55 crates filing cases, Chief Engineer; 45 cases tiles, 17 reels electric cable, 154 cases electric machinery, First Division; 762 rolls roofing felt, 207 barrels pitch, Second Division; 69,332 bags cement, Atlantic and Fifth Divisions; 500 kegs track spikes, 59 cases ink (writing), 60 cases picks, 77 rolls wire fencing, 55 crates wire fencing, 12 drums lubricating oil, 13 barrels range parts, 1,400 bundles tie plates, 1,500 kegs white lead, 15 bales rubber hose, 13 cases brass tubes, 1,970 pieces galvanized pipe, 419 bundles galvanized pipe, 4,500 pieces sewer pipe, 1,200 pieces bar iron, 358 pieces steel bars, for stock; and a miscellaneous cargo, the whole consisting of 89,694 packages, weighing 4,600 tons.

Pastores, May 25, from New York, with 1,013 pieces structural steel, Panama Railroad Company; 20 cases valve machinery, First Division; 667 bundles shovels, 31 barrels rosin, 9 crates felt, 10 cases hardware, for stock.

Heredia, May 26, from New Orleans, with 200 barrels brick, 12 crates structural steel, Panama Railroad Company; 2,664 pieces lumber, 166 tons pig iron, Mechanical Division; 398 pieces cross-ties, 86 pieces piling, 10,861 pieces lumber, 75 cases paint, 50 head mules, 15 cases lamp black, 226 pieces dipper tooth points, for stock.

Carl Schurs, May 25, from New York, with 74 kegs

rivets, 361 kegs bolts and screws, 58 drums lime, 16 barrels castings, for stock; 50 packages buoy parts, Light-house Division; 14 cases electrical material, Panama Railroad Company.

Panama, May 27, from New York with 10 cases range parts, 19 bundles sand paper, 22 cases writing paper, 50 pieces railroad switches, 75 bundles roofing paper, 21 bundles lead bends, 150 drums calcium carbide, 23 crates brooms, for stock; 2,700 pieces tiling, Second Division; 467 tons structural steel, 25 reels copper wire, First Division; 39 cases signal material, Panama Railroad Company; 125 pieces structural steel, Fortifications; 11 crates castings, Fifth Division; 40 cases wine, Sanitary Department; and a miscellaneous cargo, the whole consisting of 5,200 packages, weighing 765 tons.

Melapan, May 28, from New York, with 19 cases rubber packing, 52 bundles iron bars, 10 cases hardware, for stock; 10 cases machinery, First Division; 828 pieces structural steel, Administration Building; 340 pieces structural steel, Panama Railroad Company; 25 crates valves, Fifth Division.

Atenas, May 29, from New Orleans, with 187 pieces lumber, Mechanical Division; 399 pieces cross-ties, 908 pieces lumber, 94 pieces piling, 38 rolls cotton duck, 540 sacks dairy feed, 10 cases oil, for stock.

Eastlands, May 31, from Baltimore, with 181 cases glass (window), 142 cases blasting caps, for stock; 1,331 pieces car wheels, Mechanical Division; 47,065 pieces conduit, Second Division; 1,715 pieces structural steel, emergency dams; 844 pieces structural steel, Panama Railroad Company.

Rainfall from May 1 to May 31, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
	Ins.		Ins.
Pacific Section—			
Ancon.....	1.66	9	8.27
Balboa.....	1.51	11	8.04
*Miraflores.....	2.45	16	12.33
Pedro Miguel.....	2.36	7	13.48
Rio Grande.....	2.02	7	12.33
Central Section—			
Culebra.....	2.37	26	11.74
*Camacho.....	3.16	22	16.03
Empire.....	2.28	26	11.74
Gamboa.....	2.27	22	15.13
*Juan Mina.....	2.02	7	13.20
Alhajuela.....	1.90	31	12.63
*El Vigia.....	1.99	15	13.35
*Gorgona.....	1.70	15	13.82
*Frijoles.....	3.07	16	21.07
*Trinidad.....	2.93	25	17.73
*Monte Lirio.....	2.26	15	
Atlantic Section—			
Gatun.....	3.19	14	17.06
*Brazos Brook.....	3.90	14	18.77
Colon.....	4.74	21	22.60
Porto Bello.....	10.57	15	30.51

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, May 31, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela.	Gamboa.	Gatun Lake.
Sun., May 25.....	130.2	95.4	49.7	48.9
Mon., May 26.....	129.3	94.8	50.1	48.9
Tues., May 27.....	128.4	94.1	49.7	49.0
Wed., May 28.....	127.8	93.8	49.3	48.9
Thurs., May 29.....	128.4	94.1	49.0	48.8
Fri., May 30.....	129.3	94.9	49.2	48.6
Sat., May 31.....	128.4	94.2	49.2	48.6
Height of low water to nearest foot.....	125.0	91.0	44.0	

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa, at 9 o'clock Tuesday, Thursday and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

The National Navigation Company of Panama will have sailings for Aguadulce and Pedregal, from Panama, on June 10, and 25, and the Panama Steamship Company on June 7, 16, and 25.

Hamburg-American steamers sail for New York, via Kingston and Santiago de Cuba on Tuesdays; the *Prins Joachim* and *Prins August Wilhelm* at 10 a. m., and the *Emil L. Boas* and *Carl Schurs* at 2 p. m.

OFFICIAL CIRCULARS.

Acting Chairman and Chief Engineer.

CULEBRA, C. Z., June 2, 1913.

CIRCULAR No. 488:

During my absence from the Isthmus, Col. H. F. Hodges will be in charge of the work as Acting Chairman and Chief Engineer, effective June 3, 1913.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Commissary Coupon Books.

CULEBRA, C. Z., May 28, 1913.

CIRCULAR No. 256-K:

Effective June 1, 1913, the issue of commissary coupon books of the value of \$2.50 and \$5.00, for which collections are to be made on payrolls, may be limited in any one month to two 5-dollar books for gold employes and two \$2.50 books for silver employes.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Redemption of Unused Hotel or Commissary Books

CULEBRA, C. Z., June 1, 1913.

CIRCULAR No. 256-L.

Hereafter, employees leaving the service of the Isthmian Canal Commission may have unused coupons in hotel or commissary coupon books redeemed by the Disbursing Officer of the Commission at Empire or at the branch pay office at Cristobal or Ancon.

Employees of the Panama Railroad Company leaving the service should present hotel and commissary coupon books containing unused coupons to the Local Auditor of the Panama Railroad Company at Colon for redemption.

Unused coupon books of deceased employes should be forwarded to the Examiner of Accounts at Empire for refund to their estates in case of Commission employes, and to the Local Auditor of the Panama Railroad Company at Colon in case of railroad employes.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Port Captain, Port of Cristobal.

CULEBRA, C. Z., May 31, 1913.

CIRCULAR No. 410-B:

Effective May 25, 1913, Mr. J. St. C. Hunt was appointed captain of the port of Cristobal.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Hand Oilers and Oil Containers.

CULEBRA, C. Z., June 1, 1913.

CIRCULAR No. 338-D (Superseding Circulars Nos. 338, 338-A, 338-B, and 338-C):

Hereafter, the following hand oilers and oil containers only shall be used, and shall be considered as the I. C. C. and P. R. R. standard. Any other hand oilers or oil containers that may be in stock, however, may be used until the supply is exhausted. All replenishment of same shall be in accordance with the following list:

No. 40. 'Twenty-four-inch spring hand oiler, for use on standard gage locomotives only, capacity, 2 pints.

No. 41. Locomotive tallow pot, for use on locomotives, steamshovels, pumps, portable and stationary plants, and at power plants for filling lubricators, etc., capacity, 2 quarts.

No. 42. Stationary engine oilers, for general use around stationary power plants, on air compressors, and marine engines, etc., capacity, 2 pints.

No. 43. Standard squirt oiler (length of nozzle 4 1/2" diameter 4 3/32"), for use on floating equipment, on portable and stationary plants, and on machinery in general, capacity, 1 pint.

No. 44. Oil can with screw cover and spout, for use on locomotives and small equipment, capacity, 1 gallon

No. 45. Oil can with screw cover and spout, for use on locomotives and small equipment where 1-gallon can is not suitable, capacity, 2 gallons.

No. 46. Oil can with screw cover, for use on steamshovels and floating equipment, capacity, 5 gallons

No. 47. Eighteen-inch spring hand oiler (same as type No. 40) for use on dredges, cranes, cableways, steamshovels, narrow-gage locomotives and smaller equipment, capacity, 2 pints.

All hand oilers and oil containers shall be plainly marked with the I. C. C. and P. R. R. standard number given in the above list and with the name of the oil contained. They shall be kept clean and in good repair.

Requisitions for the above will be honored by storekeepers only for the purpose indicated, and they may be specified on requisition either by number or by name.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Method of Submitting Daily Car Reports.

CULEBRA, C. Z., May 31, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

The following form should be used by departments and divisions in submitting the daily car reports required by the Chairman's instructions of the 21st instant:

"The following cars had been held under load by this division (or department) for more than 24 hours at the close of business.....
Car No..... Kind..... Date rec'd.....
Contents..... Cause of delay....."

If there are no cars to report the form should be submitted, nevertheless, with the information "None to report."

These reports are required from the First Division, Second Division, Fifth Division, Fortifications Division, Atlantic Division, Central Division, Mechanical Division, Quartermaster's Department and Subsistence Department.

It is noted that some divisions are failing to send copies of these reports to the General Superintendent of the Panama Railroad. A copy of each report must be sent to him.

By direction of the Chairman.

C. A. McILVAINE,
Chief Clerk.

Acting Chief Dispatcher, P. R. R.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., May 28, 1913.

CIRCULAR No. 92:

TO ALL CONCERNED:

Effective June 1, 1913, Mr. C. W. Northrop is appointed acting chief dispatcher of the Panama Railroad Company, vice Mr. L. B. Maggard, resigned.

J. D. PATTERSON,
General Superintendent.

Port Captain, Port of Colon.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., May 28, 1913.

CIRCULAR No. 487:

TO ALL CONCERNED:

Effective Sunday, May 25, 1913, Mr. J. St. C. Hunt is appointed port captain of the port of Colon, vice Capt. S. Layland, assigned to other duties.

J. D. PATTERSON,
General Superintendent.

The following ships arrived at, or departed from, the port of Balboa during the week ending May 31:
Arrivals—May 25, Guatemala, from south; May

25, Mantaro, from south; May 28, Quilo, from intermediate ports.

Departures—May 27, Limari, to south; May 30, Chile to Guayaquil; May 29, City of Para, to San Francisco; May 28, Stephan, (cable ship), destination unknown.

Misdirected Letters.

ANCON, C. Z., June 4, 1913

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Bentley, G. J.	Parsons, Ernest
Brodie, Miss De Etta J.	Patterson, John
Dondican, John J.	Reeve, A. B.
Gabe, Mrs. Harry	Ross, James A.
Gougher, Edward	Savell, Clyde
Grannum, James	Scharz, Louis
Green, Em. E.	Smith, Jim E.
(or Gillmore)	Snyder, L. D.
Johnson, D. Lee	Swan, George P.
Milburn, J. W.	Wilson, Jessie S.
O'Brien, Jas. M.	Wislon, C. T.

Tide Table

The following table shows the time of high and low tides at Panama for the week ending June 14, 1913 (75th meridian time):

DATE.	Low	High	Low	High
	A.M.	A.M.	P.M.	P.M.
June 8.....		6.00	12.12	6.15
June 9.....	12.40	6.50	1.0	7.05
June 10.....	1.30	7.41	2.02	7.58
June 11.....	2.25	8.37	3.01	8.59
June 12.....	3.24	9.37	4.03	10.05
June 13.....	4.27	10.40	5.07	11.14
June 14.....	5.30	11.42	6.10	.....

Married.

HALL-HARTMAN—At Empire, on May 19, Miss Elizabeth Catheryne Hartman to Mr. Frederick Preston Hall, Rev. A. A. Nellis officiating. Canal Zone residence, Empire.

PERKINS-DUNLAP—At Culebra, on May 24, Miss Jennie Marguerite Dunlap of Worcester, Mass., to Mr. Fred Claudman Perkins of Boston, Rev. A. A. Nellis officiating. Canal Zone residence, Culebra.

Legal Notice.

United States of America } First Judicial Circuit.

Canal Zone.

The following named Americans citizens died intestate leaving personal property within the Canal Zone to the amount stated: U. S. currency.

Andrew R. Murphy.....	\$ 3.70
John Ryan.....	2.40
George Peter.....	.83
John Williams.....	2.00
Michael Coogan.....	29.50
Harry Tafel.....	8.00
Henry G. Day.....	63.58

The collector of revenues has filed a petition for the escheat of the above named estates, in accordance with Section 779 of the Code of Civil Procedure.

Notice is hereby given to all heirs or creditors of the above estates to appear before this Court in the courthouse at Ancon, on July 12, 1913, at 9 o'clock a. m., to establish their claims or to show cause why the said estates should not escheat to the Government of the Canal Zone.

WALTER EMERY,
Circuit Court Clerk.

Lost—Canal medal and bar, in Bas Obispo, on or train No. 20, to Colon, on Sunday, June 1. Reward for return to J. H. Heckman, Bas Obispo.

CLASSIFIED EXPENDITURES—ISTHMIAN CANAL COMMISSION.

A statement of classified expenditures of the Isthmian Canal Commission to March 31, 1913, follows:

PERIODS.	Department of Civil Administration.	Department of Law.	Department of Sanitation.	Department of Construction and Engineering	General Items.	Fortifications.	Total.
Total to June 30, 1909.....	3,427,090.29		9,673,539.28	69,622,561.42	78,022,606.10		160,745,797.09
Total—Fiscal Year, 1910.....	709,351.37		1,803,040.95	26,300,167.05	2,865,088.83		31,675,648.20
Total—Fiscal Year, 1911.....	755,079.44		1,717,791.62	27,477,776.19	3,097,959.72		33,048,607.97
Total—Fiscal Year, 1912.....	820,398.57	24,729.16	1,620,391.12	28,897,738.10	2,819,926.53		35,396,065.14
July, 1912.....	63,913.12	1,448.53	123,803.64	2,649,246.61	200,970.55	104,126.92	3,143,509.37
August, 1912.....	62,182.51	1,468.26	123,154.48	2,539,686.83	98,054.61	111,402.55	2,739,834.02
September, 1912.....	59,201.01	1,207.82	120,385.70	2,385,979.89	77,003.33	127,168.25	2,670,946.20
October, 1912.....	64,383.37	2,033.75	137,574.61	2,473,280.76	83,523.30	129,736.37	2,890,532.16
November, 1912.....	62,200.12	1,892.14	119,031.66	2,420,085.77	75,779.01	300,016.33	2,979,005.03
December, 1912.....	58,987.96	1,462.18	115,819.26	2,871,977.03	120,946.61	118,152.57	3,287,345.61
January, 1913.....	57,699.58	1,469.59	114,562.04	2,825,872.06	6,463.72	119,272.77	3,125,339.76
February, 1913.....	56,586.06	1,649.00	127,324.80	3,784,370.51	123,034.12	314,994.96	4,407,959.45
March, 1913.....	58,761.03	1,899.22	105,891.08	2,712,218.10	7,706.70	131,940.75	3,003,003.48
Grand total.....	6,255,834.43	39,259.65	15,902,311.24	176,860,954.32	87,385,540.71	2,669,693.13	289,113,593.48

*Denotes credit.

CANAL DIRECTORY.

ISTHMIAN CANAL COMMISSION.

Col. Geo. W. Goethals, U. S. A., Chairman and Chief Engineer, Culebra.
 Col. H. F. Hodges, U. S. A., Culebra.
 Lieut.-Col. D. D. Gaillard, U. S. A., Empire.
 Lieut.-Col. Wm. L. Sibert, U. S. A., Gatun.
 Civil Engineer H. H. Rousseau, U. S. N., Culebra.
 Col. W. C. Gorgas, U. S. A., Ancon.
 Mr. Maurice H. Thatcher, Ancon.
 Mr. Joseph Bucklin Bishop, Secretary, Ancon.

DEPARTMENTS.

Construction and Engineering.

Office of The Chairman.

Col. Geo. W. Goethals, Chairman and Chief Engineer.

William Howard May, Secretary to the Chairman.

C. A. McIlvaine, Chief Clerk.
 W. P. Copeland, Assistant Chief Clerk.
 Ad. Faure, Chief Accountant.
 H. S. Parish, Surveying Officer.

Lieut. Geo. R. Goethals, U. S. A., Assistant Engineer, Fortifications.

Office of The Chief Engineer.

First Division.

Col. H. F. Hodges, Assistant Chief Engineer.

C. O. Carlson, Secretary.

Edward Schildhauer, Electrical and Mechanical Engineer.

Henry Goldmark, T. B. Mönliche, Designing Engineers.

Walter F. Beyer, Assistant Engineer.

Second Division.

Civil Engineer H. H. Rousseau, Assistant to the Chief Engineer.

J. J. Campbell, Secretary.

Lieut.-Col. T. C. Dickson, U. S. A., Inspector of Shops.

A. B. Nichols, Office Engineer.

Civil Engineer F. H. Cooke, U. S. N., Designing Engineer.

H. D. Hinman, Assistant Engineer.

G. I. Finley, Assistant Engineer.

F. D. Willson, Supervisor.

James G. Craig, Traveling Engineer.

Third Division.

(Abolished.)

Fourth Division.

Office of the Chief Clerk.

Fifth Division.

Headquarters, Corozal.

H. O. Cole, Resident Engineer.

J. C. Keller, Chief Clerk.

Walter J. Spalding, Assistant Engineer.

W. L. Thompson, Assistant Engineer.

Sixth Division.

Headquarters, Balboa.

W. G. Comber, Resident Engineer.

James Macfarlane, Superintendent of Dredging.

Central Division.

Headquarters, Empire.

Lieut.-Col. D. D. Gaillard, Division Engineer.

W. I. Beam, Chief Clerk.

A. E. Bronk, General Inspector.

A. S. Zinn, Resident Engineer.

W. T. Reynolds, Superintendent Construction.

J. M. Hagan, Superintendent Construction.

M. W. Tenny, Superintendent Construction.

A. Sessions, Superintendent Transportation.

Dan E. Wright, Superintendent, Municipal Work and Pipe Lines.

W. D. Stanton, Assistant Engineer.

Rance Ferguson, General Foreman, Relocation Dumps.

Atlantic Division.

Headquarters, Gatun.

Lieut.-Col. Wm. L. Sibert, Division Engineer.

Lieut.-Col. Wm. V. Judson, U. S. A., Assistant Division Engineer.

Ben Jenkins, Chief Clerk.

Maj. J. P. Jervy, U. S. A., Resident Engineer.

Capt. W. H. Rose, U. S. A., Electrical Superintendent.

Maj. G. M. Hoffman, U. S. A., Resident Engineer.

Geo. M. Wells, Office Engineer.

Mechanical Division.

Headquarters, Gorgona.

A. L. Robinson, Superintendent.

William Taylor, Chief Clerk.

W. H. Bates, Superintendent, Steamshovel Repairs.

Hardley Rowe, Electrical Superintendent.

C. J. Reilly, Master Mechanic, Cristobal Marine Shops.

Subsistence.

Headquarters, Cristobal.

Lieut.-Col. Eugene T. Wilson, U. S. A., Sub-sistence Officer.

Capt. Frank O. Whitlock, U. S. A., Assistant Sub-sistence Officer.

John Burke, Manager, Commissary Department.

W. F. Shipley, Chief Clerk.

Quartermaster's.

Headquarters, Culebra.

Capt. R. E. Wood, U. S. A., Chief Quartermaster.

Joseph Birnie, Chief Clerk.

Capt. C. Nixon, U. S. A., Depot Quartermaster, Mount Hope.

C. L. Parker, Assistant Depot Quartermaster, Mount Hope.

V. C. Dillon, Storekeeper, Gatun.

R. K. Morris, Storekeeper, Gorgona and Empire.

C. A. Gilmartin, Storekeeper, Miraflores.

X. D. Holt, Storekeeper, Balboa.

District Quartermasters.

B. C. Poole, Ancon and Balboa.

J. H. K. Humphreys, Corozal and Miraflores.

J. T. Smith, Pedro Miguel and Paraiso.

H. F. Sedwick, Culebra.

W. G. Koss, Empire.

Harry Dundas, Las Cascadas and Bas Obispo.

R. C. Shady, Gorgona.

R. M. Gamble, Gatun.

Roy R. Watson, Cristobal, and Toro Point.

Chas. D. Morgan, Porto Bello.

Civil Administration.

Headquarters, Ancon.

Maurice H. Thatcher, Head of the Department.

G. A. Ninas, Chief Clerk.

C. L. Luedtke, Assistant Chief Clerk.

Tom M. Cooke, Chief, Division of Posts, Customs, and Revenues, Ancon.

Arthur McGown, Deputy Collector, Ancon.

James Daly, Deputy Collector, Cristobal.

Capt. Chas. W. Barber, U. S. A., Chief of Police, Ancon.

A. G. Belknap, Assistant Chief of Police, Ancon.

C. E. Weidman, Fire Chief, Cristobal.

Chas. F. Koerner, Assistant Fire Chief, Ancon.

M. E. Gilmore, Supt. Public Works, Ancon.

J. J. Reidy, Assistant Superintendent, Public Works, Colon.

F. A. Gause, Superintendent of Schools, Ancon.

Eugene H. Ash, Treasurer of Canal Zone, Empire.

Lieut.-Col. Wm. V. Judson, Chairman, James Macfarlane, C. J. Anderson, Board of Local Inspectors.

Canal Zone Judiciary.

Headquarters, Ancon.

Supreme Court—H. A. Gudger, Chief Justice.

Walter Emery, Clerk, Ancon.

Thomas E. Brown, Jr., Associate Justice.

William H. Jackson, Associate Justice.

Circuit Court, First Circuit—H. A. Gudger, Judge.

Walter Emery, Clerk, Ancon.

Circuit Court, Second Circuit—William H. Jackson, Judge.

Elbert M. Goolsby, Clerk, Empire.

Circuit Court, Third Circuit—Thomas E. Brown, Jr., Judge.

Nelson K. Johnson, Clerk, Cristobal.

M. C. Kerdell, District Judge, Cristobal.

S. E. Blackburn, District Judge, Ancon.

Edgar S. Garrison, District Judge, Empire.

Law.

Headquarters, Ancon.

Frank Feuille, Counsel and Chief Attorney.

William K. Jackson, Prosecuting Attorney.

Charles R. Williams, Assistant Prosecuting Attorney.

R. S. Carlson, Acting Land Agent.

Sanitation.

Headquarters, Ancon.

Col. W. C. Gorgas, Chief Sanitary Officer.

Col. John L. Phillips, U. S. A., Assistant Chief Sanitary Officer.

Maj. Robert K. Noble, General Inspector.

Harry E. Bovay, Chief Clerk.

Lieut.-Col. Charles F. Mason, U. S. A., Superintendent Ancon Hospital, Ancon.

Surgeon C. C. Pierce, U. S. P. H. S., Superintendent Colon Hospital, Cristobal.

Surgeon J. C. Perry, U. S. P. H. S., Chief Quarantine Officer, and Health Officer, Panama.

Dr. C. A. Hearne, Quarantine Officer, Colon.

Dr. Matthew J. Hoey, Quarantine Officer, Panama.

Joseph A. LePrince, Chief Sanitary Inspector, Ancon.

Dr. M. E. Connor, Health Officer, Colon.

Disbursements.

Headquarters, Empire.

Edward J. Williams, Disbursing Officer.

Wm. M. Wood, Assistant Disbursing Officer.

J. C. Wood, Chief Clerk.

C. E. Gilmore, Cashier.

E. W. Heverly, Paymaster, Ancon.

E. A. Keeling, Paymaster, Cristobal.

Examination of Accounts.

Headquarters, Empire.

H. A. A. Smith, Examiner of Accounts.

T. L. Clear, Assistant Examiner of Accounts.

Purchasing Department.

Headquarters, Washington, D. C.

Maj. F. C. Boggs, U. S. A., General Purchasing Officer.

C. E. Dole, Chief Clerk.

Capt. Courtland Nixon, Purchasing Agent on the Isthmus.

R. E. Rutherford, Commissary Purchasing Officer, 24 State Street, New York City.

Capt. William O. Smith, U. S. A., Assistant Purchasing Agent, 614 Whitney-Central Building, New Orleans, La.

Panama Railroad Company.

Headquarters, Colon.

(General offices, 24 State Street, New York.)

John D. Patterson, General Superintendent, Colon.

R. L. Mock, Chief Clerk.

Lieut. Frederick Mears, U. S. A., Chief Engineer.

A. K. Stone, Master of Transportation.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line:

NEW YORK TO CRISTOBAL.

Colon	.....P. R. R.	Monday	.....June	2
Advance	.....P. R. R.	Saturday	.....June	7
Panama	.....P. R. R.	Friday	.....June	13
Allianca	.....P. R. R.	Thursday	.....June	19
Colon	.....P. R. R.	Thursday	.....June	26
Advance	.....P. R. R.	Wednesday	.....July	2
Panama	.....P. R. R.	Tuesday	.....July	8
Allianca	.....P. R. R.	Monday	.....July	14
Colon	.....P. R. R.	Saturday	.....July	19
Advance	.....P. R. R.	Saturday	.....July	26
Panama	.....P. R. R.	Friday	.....Aug.	1

CRISTOBAL TO NEW YORK.

Allianca	.....P. R. R.	Saturday	.....June	7
Colon	.....P. R. R.	Saturday	.....June	14
Advance	.....P. R. R.	Thursday	.....June	19
Panama	.....P. R. R.	Wednesday	.....June	25
Allianca	.....P. R. R.	Tuesday	.....July	1
Colon	.....P. R. R.	Tuesday	.....July	8
Advance	.....P. R. R.	Monday	.....July	14
Panama	.....P. R. R.	Sunday	.....July	20
Allianca	.....P. R. R.	Saturday	.....July	26
Colon	.....P. R. R.	Thursday	.....July	31
Advance	.....P. R. R.	Thursday	.....Aug.	7

NEW YORK TO COLON.

Zacapa	.....U. F. C.	Wednesday	.....May	28
Emil L. Boas	.....H. A.	Saturday	.....May	31
Sixola	.....U. F. C.	Saturday	.....May	31
Almirante	.....U. F. C.	Wednesday	.....June	4
Carrillo	.....U. F. C.	Saturday	.....June	7
Prinz Joachim	.....H. A.	Saturday	.....June	7
Oruba	.....R. M.	Saturday	.....June	7
Santa Marta	.....U. F. C.	Wednesday	.....June	11
Pastores	.....U. F. C.	Saturday	.....June	14
Metapan	.....U. F. C.	Wednesday	.....June	18

COLON TO NEW YORK.

Metapan	.....U. F. C.	Thursday	.....June	5
Tivives	.....U. F. C.	Tuesday	.....June	10
Thames	.....R. M.	Tuesday	.....June	10
Prinz August Wilhelm	.....H. A.	Tuesday	.....June	10
Zacapa	.....U. F. C.	Thursday	.....June	12
Emil L. Boas	.....H. A.	Tuesday	.....June	17
Sixola	.....U. F. C.	Tuesday	.....June	17
Almirante	.....U. F. C.	Thursday	.....June	19

NEW ORLEANS TO COLON.

Parissima	.....U. F. C.	Wednesday	.....May	28
Turrialba	.....U. F. C.	Saturday	.....May	31
Cartago	.....U. F. C.	Wednesday	.....June	4
Abangarez	.....U. F. C.	Saturday	.....June	7

COLON TO NEW ORLEANS.

Atenas	.....U. F. C.	Thursday	.....June	5
Parissima	.....U. F. C.	Saturday	.....June	7
Turrialba	.....U. F. C.	Thursday	.....June	12
Cartago	.....U. F. C.	Saturday	.....June	14
Abangarez	.....U. F. C.	Thursday	.....June	19



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is published free of charge, one copy each to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Concrete Work at Pacific Locks.

The concrete work on Miraflores Locks proper was completed on May 17, on which date the finishing course was placed on the end of the southwest wing wall. The uncompleted concrete at that time consisted of miscellaneous work, such as bracket extensions for supporting the return tracks on some of the wing walls; reinforced concrete floor and stairway at junction of upper and lower middle wall; lamp post and snubbing button bases, etc. The reinforced concrete floor and stairway in the middle wall at the junction between the upper and lower locks at Miraflores was completed on Tuesday, June 10. Total amount of concrete in the Miraflores Locks to date, is 1,481,518 cubic yards.

The concrete work in the Pedro Miguel Lock proper has been finished for some time, with the exception of opening in side of wall and caisson dam sill, left in August, 1911, through which the drainage water from Culebra Cut enters the main center wall culvert just north of the emergency dam sill, to be discharged through the outlet openings at the south end.

The total amount of concrete placed in Pedro Miguel Lock is 909,292 cubic yards, making a grand total of 2,390,810 cubic yards for both Pedro Miguel and Miraflores Locks.

The first concrete was placed in the Pedro Miguel Lock on September 1, 1909, with auxiliary equipment. The concrete-handling plant used in building both Pedro Miguel and Miraflores Locks, consisting of four berm and four chamber cranes, began operations at Pedro Miguel in April, 1910.

The first concrete was placed in the Miraflores Locks in July, 1910, with auxiliary equipment. The two berm cranes, which were originally erected at Miraflores, were both in service in April, 1911, and those used at Pedro Miguel (two berm and four chamber cranes) were moved one at a time, covering

a period of about one year, all being reerected and in full service at Miraflores on March 26, 1912.

During the construction of Pedro Miguel and Miraflores Locks high records in making and placing concrete were established, as follows:

	Cubic yards.
Concrete placed in one day.....	5,560
Concrete placed in one week.....	26,959
Concrete placed in one month.....	107,000
Concrete placed in one year.....	934,410

Highest record for making and delivering concrete to wall forms by one berm crane was 962 cubic yards in 8 hours and 30 minutes, during which time this crane made a high run of 160 cubic yards in one hour.

Dredge Excavation Records Made in May.

The total excavation by dredges during May was greater than during any previous month since the beginning of the Canal construction. The total output from Atlantic and Pacific entrances was 1,522,102 cubic yards. Of this, 957,889 cubic yards were from the Atlantic entrance channel; a large part of it, however, was in the removal of silt from the previously excavated channel. About 300,000 cubic yards of this relatively light material were pumped out by the pipeline suction dredge No. 4, operating opposite the mouth of the Mindi River, in the French Canal.

Excavation in the first district of the Sixth Division, covering the Pacific entrance channel and Balboa harbor, amounted to 564,213 cubic yards, about an average output for the fleet. The dipper dredge *Cardenas* established a local record for rock excavation in deep water; on June 4, it removed 1,750 cubic yards of hard rock from a depth of 45 feet below mean sealevel in nine hours and 45 minutes of actual working time. On account of the great depth of the channel, the dredge is able to work only between mean ebb tide and mean rising tide, which allows two watches of five hours each in 24 hours. A delay of 15 minutes was caused by a hot bearing.

Navy Radio Station at Balboa.

The radio station at Balboa, operated by the Navy Department, has opened for commercial business, transmitting messages to ships on the Pacific side of the Isthmus at the rate of eight cents a word. The range of delivery is about 200 miles in the daytime, and up to approximately a thousand miles at night, when the atmospheric conditions are favorable. The station has direct wire connection with the Panama railroad telegraph and telephone lines.

The 2-kilowatt plant, with which the station is equipped, was made by the Wireless Improvement Company of New York. It uses a "break system", which allows a receiving station to break in on the transmission of a message, in order to ask for repetition or explanation. In the intervals when the send-

ing key is released between dots and dashes it opens a relay in the receiving circuit and the operator is able to hear calls from other stations. Electricity is received from the nearby power plant of the Isthmian Canal Commission and transferred by the apparatus to a high frequency oscillating current, and as such, is radiated by the antenna at 12,500 volts. The antenna is attached at one end, to the smokestack of the power plant, and at the other, to a steel frame tower, about 110 feet high. Messages are sent with the Continental code, under the rules of the Berlin Convention of 1912, governing international wireless telegraphy. Four operators are employed at the station, working on 4-hour shifts, day and night.

Preparations for Dredging Cucaracha Slide.

A relay pumping station is being installed on the west side of Culebra Cut, near the bridge of the Panama railroad over the Rio Grande, in anticipation of dredge excavation at the foot of Cucaracha slide. The plan as at present contemplated involves passing the discharge pipeline of two suction dredges across the Cut on pontoons, and up the west bank to the relay station; thence down the valley of the Rio Grande about 4,000 feet to discharge west of Cerro Luisa, the hill at the outer end of Pedro Miguel Dam. It is probable that an earth dam will be thrown from the lower end of Pedro Miguel Lock to the hills on the other side of the river, a distance of about 1,500 feet, and the swamp west of the lock will be filled with spoil from the slide.

Bridge on Ancon-Corozal Road.

The only stream crossed by the Ancon-Corozal wagon road over which it will be necessary to construct a bridge is the Curundú River, which flows across the Panama railroad right-of-way a little south of the Balboa wye. The plans for this bridge, which have been approved, provide for a reinforced concrete structure, consisting of a single span 20 feet long between piers, with a width of 17½ feet over all, and a clear width of 15½ feet. The floor supports will consist of concrete beams, two center beams, each 13 inches wide, and two outer beams, one on each side of the center beams, each two feet six inches wide, all placed longitudinally. These beams will carry the floor slabs, five inches thick, laid transversely. The outside beams will be formed into parapets about a foot high, to be surmounted by iron railings, consisting of two rows of 1½-inch gas pipe, with posts of 2-inch gas pipe spaced seven feet apart. The floor of the bridge will have a 2-inch slope from the center toward the sides to insure proper drainage.

The bridge span will be supported by two abutments of T-shaped design, 12 feet in height and 14 inches thick at the bottom, resting on concrete bases, each six feet wide and

two feet thick, resting, in turn on 25 piles. The piers will narrow toward the top, and from their sides, wing walls will be built out for a distance of 10 feet, at an angle of 45 degrees. These wing walls are designed to protect the approach fills; they will slope toward the top, and are provided with counterforts at the bottom of the outer ends.

About 8,750 pounds of steel, 92 feet of 1½-inch pipe, 28 feet of 2-inch pipe, and 131 cubic yards of concrete will be required for the work, which is estimated to cost \$2,500. Preliminary work on the bridge was begun on Friday, June 6.

Concrete Work in Locks and Spillways.

Concrete work in the Canal locks is nearly completed, the aggregate amount in place at the close of work on June 7, being 4,461,597 cubic yards.

A statement of the concrete laid in the three sets of locks for the Canal, and in Gatun and Miraflores spillways, as of June 7, follows:

GATUN LOCKS.		Concrete laid.
June 2.....		196
June 3.....		392
June 4.....		248
June 5.....		324
June 6.....		280
June 7.....		314

Total.....1,754
Previously reported.....2,035,867

Grand total.....2,037,621

PEDRO MIGUEL LOCK.		
June 2.....		9
June 3.....		3
June 4.....		
June 5.....		6
June 6.....		
June 7.....		3

Total.....21
Previously reported.....921,158

Grand total.....921,179

MIRAFLORES LOCKS.		
June 1.....		128
June 2.....		33
June 3.....		53
June 4.....		
June 5.....		219
June 6.....		33
June 7.....		

Total.....466
Previously reported.....1,502,331

Grand total.....1,502,797

GATUN SPILLWAY.*		
June 2.....		18
June 3.....		132
June 4.....		90
June 5.....		34
June 6.....		90
June 7.....		54

Total.....418
Previously reported.....226,811

Grand total.....227,229

MIRAFLORES SPILLWAY.		
June 2.....		1,238
June 3.....		1,337
June 4.....		1,241
June 5.....		1,177
June 6.....		1,301
June 7.....		1,136

Total.....7,430
Previously reported.....44,186

Grand total.....51,616

*Includes hydro electric station.

Following the petition of persons representing 16 families living at Camp Diablo, for 'bus service to and from the Corozal station of the Panama railroad, it has been arranged to have the 'bus make a trip from Diablo to the station to meet trains Nos. 2 and 3, at about seven in the morning, and also to meet the train from Panama at 5.33 p. m.

FOURTH OF JULY PROGRAM.

Complete List of the Day Events at Cristobal Announced—Reports of Committees.

A meeting of the executive committee of the Fourth of July celebration was held at Ancon on Tuesday, June 10, the chairman, Mr. M. H. Thatcher presiding. Reports were submitted showing that the plans for the day's events were well under way, and summarized, are as follows:

Entertainment—The official program for the day was presented and adopted. Pier No. 16 will be used as general headquarters, including the serving of refreshments, which will begin at 12 noon. It will be extensively decorated, as well as the houses along Roosevelt avenue, and at night, both the pier and street will be illuminated with colored electric lights. A request received from the superintendent of the Palo Seco leper asylum for a supply of bunting and Chinese lanterns for decorative purposes in the grounds of the institution will, if practicable, be granted.

Finance—The most of the blank forms for the use of this committee have been printed, and the canvass for funds will be begun at once.

Fireworks—The order for fireworks went forward on May 26, and the shipment is expected to reach the Isthmus the latter part of this month.

Dance and music—The dance in the evening will be held at pier No. 16, and, in case of rain, the dancers will be protected by a canvas roof. The bands of the Tenth Infantry and the United States Marine Corps have been engaged for the day events, and the Tenth Infantry orchestra for the dance.

Transportation—Arrangements for the running of trains are well in hand. The first train to arrive in Colon will be the one carrying the men of the Tenth Infantry and Marine Corps. It is expected that the last of the morning trains will have discharged their passengers by 9 o'clock.

A letter was read from Colonel Goethals stating that it would be impracticable for him to deliver the Fourth of July address, and Col. W. C. Gorgas has been chosen for this feature.

The matter of appointing a new chairman of the executive committee to succeed Mr. M. H. Thatcher, who has resigned as a member of the Isthmian Canal Commission, was referred to Col. H. F. Hodges, the Acting Chairman and Chief Engineer.

The program for the day events, in full, follows:

- A. M.
- 8.45 Musical drill, Butt's Manual, by a company of the Tenth Infantry.
 - 9.00 100-yard low hurdles. Prizes; gold, silver, and bronze medals.
 - 9.00 Shot put. Prizes; gold, silver, and bronze medals.
 - 9.00 Start of tennis finals, in singles, Prizes; gold, silver, and bronze medals.
 - 9.00 Sailing canoe race. Distance, 1½ miles. Course, start from between piers Nos. 16 and 17, around buoy in bay, and return. Prize; pennant.
 - 9.15 Boys' 75-yard dash. Prizes; sterling silver watch, gold cuff links, and gold stick pin.
 - 9.15 Lifeboat race, Class 1. Four-oared, single-scutt, and coxswain. Distance, one mile, straight-away. Start from buoy in bay, finish between piers Nos. 16 and 17. Prizes; \$25 and \$15.
 - 9.20 Navy steam cutter race. Distance, about five miles. Triangular course in bay; start and finish opposite pier No. 15. Prize; pennant.
 - 9.30 100-yard dash. Preliminaries and semifinals.
 - 9.40 Gasoline boat race. Gasoline boats, *Dixie*, *Psyche*, and *Lirio*. Distance, about five miles.

- Triangular course in bay, start and finish opposite pier No. 15. Prize; \$15.
- 9.45 880-yard run. Prizes; gold, silver, and bronze medals.
- 9.45 Running high jump. Prizes; gold, silver, and bronze medals.
- 10.00 100-yard dash. Finals. Prizes; gold, silver, and bronze medals.
- 10.00 Gasoline boat race, free for all. Distance, about five miles. Triangular course in bay, start and finish opposite pier No. 15. Prize; \$15.
- 10.15 440-yard run. Prizes; gold, silver, and bronze medals.
- 10.15 Running broad jump. Prizes; gold, silver, and bronze medals.
- 10.15 Wall-scaling contest. Prize; \$40 to winning team.
- 10.15 Paddling canoe race. Distance, one mile. Course from buoy in bay to finish between piers Nos. 16 and 17. Two-man teams. Prizes; two gold, two silver, and two bronze medals.
- 10.30 Boys' relay. Prizes; sterling silver watches to winning team.
- 10.30 Pole vault. Prizes; gold, silver, and bronze medals.
- 10.45 Potato race. Prizes; \$5, \$3, and \$2.
- 10.45 Tug-of-war. (8-men teams). Prizes; \$40 to winning team.
- 11.00 220-yard dash. Prizes; gold, silver and bronze medals.
- 11.15 One mile relay (four men). Prizes; Four gold medals to winning team.
- 11.15 Marathon race, to start at Colon Hospital gate, thence down Colon beach road to Christ Church, thence down Bolivar street to Eleventh street, thence into Cristobal, and along Roosevelt avenue to finish point opposite building No. 2. Prizes; gold, silver, and bronze medals.
- 11.30 Patriotic exercises. Address to be made by Col. W. C. Gorgas.
- 12.00 Lunch.
- P. M.
- 1.00 Drill by boy scouts.
- 1.30 Tugboat race, between the *Empire*, *Porto Bello*, *Mariner*, *Bohio*, and *Gatun*. Distance, five miles. Course, straightaway from starting buoys opposite end west breakwater to finish at buoys opposite pier No. 16. Prize; \$60.
- 2.00 50-yard swimming dash for men. Course, between piers Nos. 16 and 17. Prizes; gold, silver, and bronze medals.
- 2.10 Fancy diving contest for men. Height, 16 feet. Each contestant to have five dives, three specified-front, back, and 1½; two optional. Prizes; gold, silver, and bronze medals.
- 2.10 50-yard tub race. Course, between piers Nos. 16 and 17. Prizes; \$10 and \$5.
- 2.15 Aquatic wrestling match, free for all. To take place on 30-foot greased floating platform between piers Nos. 16 and 17. Winner to be last man on platform. Prize; \$25.
- 2.30 Swimming race for men. Distance, one mile. Course, between piers Nos. 16 and 17. Prizes; gold, silver, and bronze medals.
- 2.30 Tennis finals, in doubles. Prizes; two gold, two silver and two bronze medals.
- 2.35 50-yard swimming race for women. Course, between piers Nos. 16 and 17. Prizes; gold, silver, and bronze medals.
- 2.50 100-yard swimming race for men. Course, between piers Nos. 16 and 17. Prizes; gold, silver, and bronze medals.
- 3.00 60-foot form dive. Each contestant to make three dives. Prizes; gold, silver, and bronze medals.
- 3.00 Upset canoe race. Two-man teams. Distance, 1,000 feet. Course, between piers Nos. 16 and 17. Contestants to start at first pistol shot; at second pistol shot to upset canoes, filling them with water, righting same, re-entering canoes entirely, and resume paddling to finish. Prize; pennant.
- 3.15 Aquatic jousting tournament. Two-man teams. Between piers 16 and 17. Prize; \$20.
- 3.30 50-yard swimming race for boys under 16 years of age. Course, between piers Nos. 16 and 17. Prizes; sterling silver watch, gold cuff-links, and gold stick pin.
- 3.35 Relay swimming race for men. Distance, 200 yards. Four-man teams. Course, between piers Nos. 16 and 17. Prizes; four gold medals to winning team.
- 4.00 Volunteer fire company races.
- 6.00 Fire department exhibition.

Address entries for the aquatic events to Mr. W. J. White, dock No. 13, Cristobal; for the athletic events to Mr. P. T. Woolworth, Y. M. C. A., Gatun.

WORK AMONG THE SAN BLAS.

Miss Annie Coope, American Missionary, Establishes Mission with Rio Diablo Tribe.

Miss Annie Coope, the American missionary, who left on February 20 to open a mission among the San Blas Indians at San José Nirgana, a settlement on an island of the Mulatas Archipelago, at the mouth of the Rio Diablo, returned to Colon on May 28, to lay in a fresh stock of supplies. She is the first American woman missionary, and possibly the first English-speaking missionary, who has ever succeeded in obtaining a foothold among these Indians, who, from time immemorial, have been noted for their exclusiveness.

Miss Coope made her first attempt in 1909, stopping at two of the Indian villages, but could not obtain permission to stay. She then turned her attention to other fields, but never relinquished the idea of making another effort. During the interval between her first and last visits, negotiations were conducted with the chief of the Rio Diablo tribe, with the result that she ultimately succeeded in obtaining from him an invitation to take up her residence in his village.

She made her second voyage in a sailing vessel that stopped at various trading points along the coast, and nine days were spent on the way, although the distance from Colon is only about 100 miles. Her trunk and part of her supplies were sent on ahead. She was hospitably received, notwithstanding an attempt had been made previous to her arrival to prejudice the feeling of the people against her and her work. The Indians, however, were very desirous that their children should acquire a knowledge of English, and it is to this task that Miss Coope has principally applied herself during her three months' stay among them.

She was assigned quarters in the only house with a corrugated iron roof in the village, which, with the lean-tos, gave her ample living accommodations, as well as room for the school. In the class which she formed, there were several boys who displayed considerable aptitude in the spelling of English words. In a particular instance, one boy was able to spell 100 words correctly within the space of one month after his entry in the school. Miss Coope's method has been to impress the words on the student's memory with the aid of some object familiar to them, as a table, lamp, candle, etc. The parents evince considerable interest in the children's progress, and always appear pleased when informed that they are learning rapidly. The girls of the village, she found, took less interest in the school, and were more difficult to handle. Now and then, she holds an old-fashioned spelling "bee," in which the elders join, for they appear equally desirous of understanding the language. She has made some progress in acquiring the Indian speech, and devotes a part of her time regularly in perfecting her knowledge of it.

Life in Nirgana is very simple, and, while exceedingly lonely at times, Miss Coope feels that it is the beginning of a great work, and is well satisfied with the progress she has made so far. Food supplies, to which the average person is accustomed, cannot be obtained in the village, and have to be brought from Colon. The Indians live principally on fish, turtle meat, a few native vegetables, and fruit. Beefsteak is never seen, as there are no cattle. Formerly, Miss Coope received her mail about

once in from six to eight weeks. A new trading line was recently established, which operates a gasoline launch along the coast east of Colon, and it has reduced the time of traveling between that city and Rio Diablo to about 16 hours. Miss Coope returned to her mission, accompanied by the chief's little son, who was with her on the trip, on Saturday, June 7.

PERSONAL.

Mr. H. Percival Dodge, Envoy Extraordinary and Minister Plenipotentiary of the United States at Panama, sailed for the United States on the *Tivives* of the United Fruit Company's service, on Tuesday, June 10, on three months' leave of absence.

Congressman Harry H. Seldomridge of Colorado, accompanied by his wife and two daughters, arrived on the Isthmus on the *Colon*, which docked at Cristobal on Sunday, June 8.

Congressman Michael F. Conry of the Fifteenth New York District, with residence in New York City, accompanied by his secretary, arrived on the *Cristobal* on Tuesday, June 10. He is a member of the House Committee on Accounts and Committee on Rules.

The resignation of Mr. L. D. Cornish, who for the past five years has been designing engineer under Col. H. F. Hodges at Culebra, became effective on June 1. He was born on March 30, 1877, at Lee Center, N. Y., and served as a private from June 17 to November 30, 1898, in the Spanish-American War, in Company C, Third New York Volunteers. In June, 1902, he graduated from Syracuse University, with degree of civil engineer, and was with the New York Central and Hudson River Railroad from June to September, 1902. From September, 1902 to September, 1906, he was with the United States Engineer's Department at Pittsburgh, Pa., on design and construction of locks and movable dams on the Ohio River, and for the last three years of this period was under Lieut.-Col. William L. Sibert. He was next ordered to Washington by the Chief of Engineers, U. S. A., to assist in the work of the International Consulting Board, appointed to decide upon the type of Canal, and served with the Board from October, 1905, to February, 1906. In September, 1906, he received his appointment with the Isthmian Canal Commission, and was assigned to the work of designing the spillways and protective features of the Canal. In June, 1907, he was ordered to the Isthmus by Colonel Goethals, and appointed designing engineer under Colonel Sibert. In September, 1907, he was placed at the head of the subdivision of the Chief Engineer's office, charged with the general lock design, masonry, reinforced concrete, and valves, which post he held until the designs were completed. Mr. Cornish will return to the United States about June 17.

Deposits Required from Canal Zone Water Users.

In order to avoid loss to the Government from uncollected water rents, the Acting Chairman of the Commission has approved the recommendation of the Head of the Department of Civil Administration that, due to the early depopulation of the Canal Zone and the abandonment of towns therein, it has been deemed necessary to require all water consumers in the Canal Zone to deposit the estimated quarterly rental for each water connection not later than July 15, 1913.

Regular quarterly bills will be rendered thereafter, as contemplated by the ordinance, which must be paid by the water consumer within the time allowed. When the connection is eventually disconnected final payment of water rental due will be deducted from the amount on deposit, and the balance will be returned to the water consumer. Deputy Collectors of Revenues have been instructed to mail to each consumer in the Canal Zone written notice of this change from the procedure heretofore followed.

Resignation of Mr. Thatcher.

The resignation of Mr. Maurice H. Thatcher, as a member of the Isthmian Canal Commission, and Head of the Department of Civil Administration, to take effect at the expiration of his vacation leave on August 8, 1913, was forwarded to the Secretary of War on Tuesday, June 3. He was appointed a member of the Canal Commission by ex-President Taft on April 12, 1910, and on May 13, was placed in charge of the Department of Civil Administration of the Canal Zone, and entered upon the discharge of his duties.

Mr. Thatcher was born in Chicago, Ill., but was reared in Kentucky. In 1898, in Frankfort, he was admitted to the practice of law, and shortly afterward was appointed assistant attorney general of the state, a post he held until 1900. He was made Assistant United States Attorney for the Western District of Kentucky, on July 1, 1901, an office he held until he resigned on August 1, 1906, and entered upon the general practice of his profession in Louisville. He continued the practice of law until March, 1908, when he was appointed state inspector and examiner for Kentucky, from which position he resigned to take membership on the Canal Commission.

Mr. and Mrs. Thatcher will sail for New York on the *Colon*, leaving Cristobal on Saturday, June 14, and from there will go to Frankfort, Kentucky.

Death by Asphyxiation.

Jonathan Bentley, a native of St. Vincent, check No. 178122, employed in the Second Division at the Balboa terminals, was asphyxiated at the bottom of a caisson pit, 75 feet below the surface, at pier No. 1, at 6.45 a. m., Thursday, June 5. Joseph Velox, St. Vincentian, check No. 160859, who went down the pit to investigate Bentley's case, was also overcome, and as the bucket in which he was lowered was drawn to within seven or eight feet of the top, he fell to the bottom, and was dead when reached. A third man, Joseph Williams, who went down into the pit, became unconscious, but afterward revived.

I. B. of S. S. and D. M.

The International Brotherhood of Steamshovel and Dredgemen will hold its next meeting at the Empire lodge hall, on Sunday, June 15, at 12.15 p. m. All members are requested to attend.

Empire, C. Z. June 8, 1913.

JOHN I. MAJOR,
Secretary and Treasurer.

Missing Men.

Any one having information regarding the whereabouts of John Bradley, formerly with McClintic-Marshall Company; Valdemar Anderson, alias Walther Anderson; and T. R. Brazil, is requested to communicate with the American Consulate-General, Panama.

SAFETY IN THE TUNNEL.

Staff System Makes Collision In Territory Mechanically Impossible.

The staff system recently installed by the Panama Railroad Company at Miraflores offers the maximum factor of safety to congested traffic passing through the tunnel, with as little delay as local conditions will permit. Sixteen to 20 trains per hour can be handled safely between the interlocked limits of North Cabin and South Cabin, depending on the time consumed by each train while passing through the staff territory.

The possession of a staff by any train gives it absolute rights between the two cabins, regardless of previous train orders or time table authority. Without a staff a train has no rights whatever within the staff territory.

The system consists of two high speed staff instruments, identical in design, and one of which is located in either cabin. They are electrically interconnected in such a manner that but one staff can be removed from the two machines at the same time. A track circuit extends between the two cabins, its function being to actuate indicators for the information of the signalmen on duty, and the presence of a car or engine within the tunnel also opens the line circuit, making manipulations of the staff instruments impossible at that time.

The staff instruments are electrically connected to the mechanical interlocking machines in such a manner that a signal cannot be brought to its "proceed" position for any trains entering the tunnel, without a staff to first unlock the master lever. This same arrangement forces the signalman to place all signals in their "stop" position as soon as a train has passed under them. The arrangement thus gives absolute protection against both rear and head-on collisions.

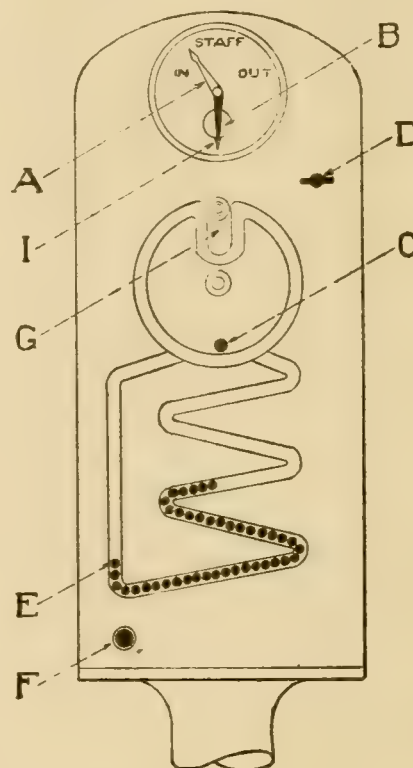
To illustrate the manipulation let it be assumed that the sketch accompanying this article represents the staff instrument at North Cabin and that a southward train is about to enter the tunnel. The signalman at North Cabin signals by three contacts on his bell key "F," giving a corresponding number of rings on the single stroke bell at South Cabin. South Cabin acknowledges with two rings, holding in bell key "F" on the second contact until the second deflection of his indicator "I" assures him North Cabin has removed the staff. The contact of bell key "F" at South Cabin deflects indicator hand "I" on the other instrument, to the right. The signalman at North Cabin noting this, turns the preliminary spindle "D" to the right and releases it, changing disc "B" from red to white. The first staff "E" in left hand side of staff spiral is then moved upward and enters drum "C" through its slot "B," drum "C," having been previously rotated to allow the staff to enter slot "B". The staff is then used as a handle to rotate drum "C" clockwise to a point where the staff can be removed.

North Cabin then signals four taps to indicate a train is about to enter the tunnel; South Cabin acknowledges with two taps and these bell code signals automatically change indicators "A" on both instruments to read "staff out." The staff is then inserted in the aperture on the staff lever lock, the master lever reversed, the signals brought to "proceed" and the staff delivered to the forward end of the train as it passes the

cabin. These manipulations appear complicated and cumbersome, but in actual practice a staff is removed and the unlock given in less than six seconds.

When the train passes South Cabin the staff is handed to the signalman who inserts and locks it in his machine without assistance from the other cabin. An exchange of code signals, given on bell keys "F" after the train has left the track circuit, restores the indicators "A" on both instruments to read "staff in", and places the machines in synchronism for the next manipulation. If the staff is replaced in the same instrument from which it was removed the scheme of operation is similar.

The staff instruments in use at Miraflores are a development of the English staff machines in use as early as 1840 in that country.



STAFF INSTRUMENT.

The early models were slow in operation and delivered staffs three feet long and weighing about four pounds. The staff in use at Miraflores is a turned key, three-quarters of an inch in diameter, seven inches long, and weighing but 10 ounces, when in its rubber holder. The old style staff had to be delivered from a crane, constructed similarly to those used in delivering mail pouches at small stations.

Experience has proved that the high speed staff, held vertically and loosely supported by the hand, can be picked up easily by an engineman when running at the rate of 25 miles per hour. This also applies to the delivery of the staff to the signalman when the engineman holds it loosely at its upper end and allows it to hang vertically.

Identification has been established in the case of the man found dead on May 26 along the railroad track, near El Diablo. He was José Felix Gutierrez, a married Panamanian, who was employed in the Fifth Division, and lived at Corozal.

STEAMSHOVEL RECORDS.

Work of Central Division Machines During the Month of May.

During the month of May, the total amount of material excavated in the Central Division was 921,000 cubic yards, of which 354,061 cubic yards were classified as earth, and 566,939 cubic yards as rock. Of the total, 896,600 cubic yards were primary excavation in the Canal prism, and 24,400 cubic yards were from ditch for draining old Culebra Dump. The total—921,000 cubic yards—was removed by steamshovel.

The high record for the month was made by shovel No. 208, working 25½ days in the Culebra district, which excavated 44,785 cubic yards, of which 24,900 cubic yards were rock, and 19,885 cubic yards earth.

The second best record for the month was made by shovel No. 207, working 25 days in the Culebra district, which excavated 39,505 cubic yards of rock.

The best record for a shovel of the 70-ton class was made by shovel No. 109, working 26 days in the Culebra district, which excavated 31,400 cubic yards, 18,980 of which were earth and 12,420 rock.

Shovels Nos. 208 and 207, working in the Culebra district, both made a high record for one day by each excavating 2,430 cubic yards of rock on May 1 and 13, respectively.

Shovel No. 224, working on a 12-hour shift in the Culebra district, made a high record of 2,432 cubic yards of earth on May 6.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best records for the month and for one day are shown below:

BEST RECORDS FOR THE MONTH.

SHOVEL No.	CULEBRA DISTRICT.			
	CUBIC YARDS.			
	Earth.	Rock.	Total.	No. of days at work.
208.....	19,885	24,900	44,785	25½
207.....	.....	39,505	39,505	25
206.....	17,300	17,300	34,600	37
224.....	34,600	.....	34,600	37½

SHOVEL No.	EMPIRE DISTRICT.			
	CUBIC YARDS.			
	Earth.	Rock.	Total.	No. of days at work.
221.....	24,238	11,443	35,681	27½
262.....	.....	35,580	35,580	33½
232.....	21,823	13,195	35,018	35½

BEST RECORDS FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
232	Empire.....	May 1	Rock.....	2,318
232	Empire.....	May 3	Rock.....	2,299
262	Empire.....	May 5	Rock.....	2,299
208	Culebra.....	May 1	Rock.....	2,430
207	Culebra.....	May 13	Rock.....	2,430
207	Culebra.....	May 14	Rock.....	2,250
206	Culebra.....	May 5	Rock and earth..	2,380

The excess number of days over and above the actual number of working days in the month of May (26), is due to double shift and night work.

Fatal Accident at Pedro Miguel Lock.

Olaf P. Stevenson, a naturalized American, employed as an erector by the First Division at Pedro Miguel Lock, was killed at 1.45 p. m., on Friday, June 6. He was engaged in adjusting a roller under a heavy casting, when the latter became overbalanced and fell on him, causing his death almost instantly. He was a native of Bergen, Norway, was 36 years of age, married, and had been on the Isthmus for several years. He is survived by his wife, Mrs. Olga M. Stevenson, residing at Empire.

MOSQUITO DEVICE.

Local Invention for Detecting Direction of Flight.

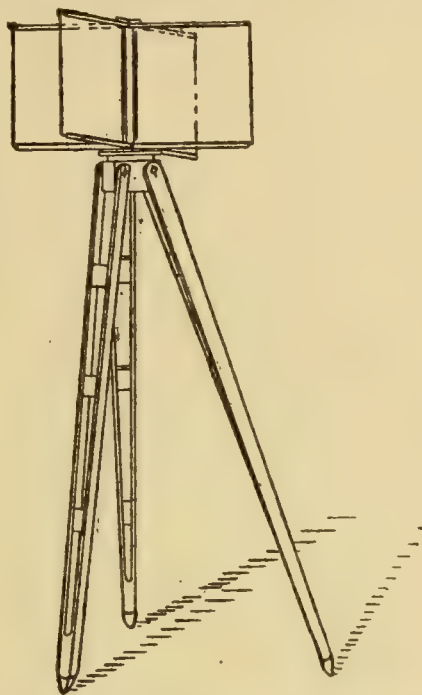
An instrument for the detection of the direction of flight of adult mosquitoes has been invented by Mr. E. Frederick Quimby, division inspector in the Department of Sanitation. It consists of a metal frame holding four plates of glass, each 12 by 12 inches in size, placed upon a tripod. The glass plates are held stationary at right angles to each other, so that when the instrument is set up, they point north, east, south and west. To catch the mosquitoes a coat of tanglefoot, composed of one-half pound of rosin to one liter of castor oil, is prepared, and when applied to the glass is practically transparent.

The first experiment with the instrument was made west of oil tank No. 62, at Mount Hope, on March 8. It was set up at 6.30 p. m. The first mosquitoes were noticed at 6.35 p. m., and were *Culex* coming from the east in a straight line. The *Anopheles* flight followed at 6.40 p. m. from the same direction, but these mosquitoes were moving low and slow in zigzag flights, as if seeking lulls in the wind. The first mosquitoes caught on the plate were noted at 6.55 p. m. At this time the wind was blowing at a velocity of 19 miles an hour from the north, but between 7 and 8 o'clock it increased to 25 miles an hour, still from the north. The first mosquitoes were caught on the east side of the south plate, but a few minutes after 7 o'clock, adults were caught on the north side of the east plate. The flight stopped at 7.15 p. m., and no adults were caught until 8.05 p. m.

An all-night test was made on the night of March 13 and morning of March 14 on a point of land, situated between the French and East Divisions, about 1,000 feet west of the power house at Gatun. During this experiment, the following points were brought out: That the adult *Culex* and *Anopheles* flew on the quarter of a 17 to 19-mile wind; that the evening flight occurred between 6.10 and 7.10; that there was a complete lull in the flight after 7.10 o'clock; that there was

a return flight between 5.50 and 6.40 in the morning, also on the wind's quarter; that the mosquitoes fly much higher and swifter in the morning than they do at night; and that, with possibly few exceptions, only adult females are in flight.

On the night of March 19, and morning of March 20, another all-night test was con-



DEVICE FOR INDICATING DIRECTION MOSQUITOES FLY.

ducted at the same place as above. During this experiment, an *Anopheles* mosquito was caught for the first time on the opposite side of the plates from the direction of the flight. This adult was a male, the only one captured during the experiments up to that date. It is believed that this male may have been flying about aimlessly when caught. The

instrument has proved to be useful in locating breeding places by eliminating the area facing the plates that do not show a catch. It also identifies the species of mosquitoes in the dark, as well as in the light, thereby determining the direction of flight, if any, during the night. Experiment shows that there is no direct flight during the night, after a certain period. Further, this is the first time that a return flight has been recorded on the Isthmus; and it was shown to take place within a period.

Examinations by Board of Local Inspectors.

The Board of Local Inspectors will conduct examinations at the Administration Building, Ancon, on Wednesday, June 18, 1913, beginning promptly at 2 p. m., for persons desiring to procure the following classes of licenses: Pilots, masters, mates, marine engineers, chauffeurs and navigators of motor boats. All applicants for licenses must procure from the Executive Office, Ancon, forms for application and information respecting the filling out of same, not later than the day previous to the examination. Applicants for chauffeur's licenses must also bring automobiles with them.

Odd Fellows' Election.

At the meeting of Pacific Lodge, No. 4, Independent Order of Odd Fellows, Ancon, held on Thursday night, June 5, officers were elected for the ensuing term, as follows: Noble grand, A. F. Holzapfel; vice-grand, Karl P. Curtis; secretary, Emil J. Rall; treasurer, A. S. Curtis. The installation of officers will take place after the first regular meeting of the lodge in July, at the lodge room, Ancon Hall.

Obituary.

The death of John H. Nicholson, a white American employed by the American Cement Tile Company at Paraiso, occurred at Ancon Hospital on Sunday, June 1. He was 22 years of age, unmarried, and had been on the Isthmus five months. His home in the United States was at Wampum, Pa., where his parents reside.

CANAL MEDAL SECOND BAR LIST.

(Concluded.)

Below are published the names of American employees of the Isthmian Canal Commission, who completed six years of continuous service on the Isthmus during the twelve months ending December 31, 1912, and are, in consequence, entitled to receive a second service bar for their Canal Medal. The date shown opposite each name is that on which the bar service began.

The list is now published in order that it may be carefully checked by those interested. Any omissions, errors in spelling of names, or in the dates from which service is reckoned, should be promptly reported to the office of the Chairman, at Culebra, for correction.

The heads of divisions are requested to check carefully their lists of American employees on the silver rolls, and report any omissions on the second bar list to the above office.

Names of employees of the Isthmian Canal Commission, entitled to a third bar, and employees of the Panama Railroad Company, entitled to medals or bars, will be published in subsequent issues.

Medal and bar service begins at the time of an employee's arrival on the Isthmus; not at the time of his departure from the United States.

Name.	Date.	Name.	Date.	Name.	Date.	Name.	Date.	Name.	Date.
1910.									
Falkner, William H....	Nov. 4	Strock, William T....	Nov. 18	Deyo, Daniel B.....	Nov. 26	McPeake, John C....	Nov. 30	Green, George W....	Dec. 16
Pickel, Oscar C.....	Nov. 4	Fey, William L.....	Nov. 19	Ewing, Ora M.....	Nov. 26	Meacham, Fred.....	Nov. 30	Raymond, Vincent...	Dec. 16
Speicher, John.....	Nov. 5	Etowski, Joseph.....	Nov. 20	Johannes, Guy.....	Nov. 26	Wagner, George D...	Dec. 1	Erskine, William A...	Dec. 18
McLean, Neil.....	Nov. 5	Fagan, Samuel.....	Nov. 20	Moffat, David H.....	Nov. 26	Duey, William J....	Dec. 3	Healey, Edward B...	Dec. 19
Moran, William A....	Nov. 5	Fox, Maurice W.....	Nov. 20	Shepard, Frank A...	Nov. 26	Caton, Armisted T...	Dec. 5	Poyle, Ransome.....	Dec. 19
Wright, Charles.....	Nov. 6	Nims, Willard W....	Nov. 20	Kirby, Jeremiah F...	Nov. 27	Marstrand, Otto T...	Dec. 5	Tate, Gilbert M....	Dec. 19
Viberg, George L....	Nov. 11	Rutledge, Richard B.	Nov. 20	Heverly, Ernest W...	Nov. 29	Ward, William H., Jr.	Dec. 5	Ford, Walter G.....	Dec. 21
Dorson, Frank.....	Nov. 12	Smith, Lewis A.....	Nov. 20	Davoll, Charles E...	Nov. 29	Strong, James M....	Dec. 7	Gaeb, Harry J.....	Dec. 21
Fleischmann, Isaac H.	Nov. 12	Stoddard, Richard J.	Nov. 20	Johnson, Frank E...	Nov. 29	Witmer, William H...	Dec. 9	Burch, James L....	Dec. 22
Helmerichs, Otto....	Nov. 12	Turner, Edward K....	Nov. 20	White, Hugh J.....	Nov. 29	Butler, William H...	Dec. 10	Cnidester, Walter S.	Dec. 28
McNeal, George A....	Nov. 12	Hoagland, Richard C.	Nov. 23	Brown, Ed Lee.....	Nov. 30	Carson, George B...	Dec. 10	Hill, Charles H., Jr.	Dec. 28
Arden, Oliver.....	Nov. 14	Wirz, Charles C. J...	Nov. 23	Calvit, Stephen.....	Nov. 30	Brown, Robert H...	Dec. 11	Hill, Iver G.....	Dec. 28
Newdick, Alton H....	Nov. 16	Burdge, Leroy E....	Nov. 26	Donaldson, William J.	Nov. 30	Arthur, Robert T...	Dec. 13	Kuehnle, Adolph G...	Dec. 28
Petioletti, Lauritz...	Nov. 16	Burmester, Edward A.	Nov. 26	Fields, John B.....	Nov. 30	Kerruish, William L.	Dec. 13	Stolberg, Ernest W...	Dec. 28
Taylor, William D....	Nov. 16	Callizo, Julius.....	Nov. 26	Foster, Frank.....	Nov. 30	Poultney, Charles...	Dec. 14		

SOCIAL LIFE OF THE ZONE.

Ancon Study Club Tea.

The Ancon Study Club will give a tea at Ancon Hall on Tuesday afternoon, June 7, in commemoration of Bunker Hill Day. There will be an art exhibit and a short program of music, readings, and recitations. Tea and homemade cakes will be served. Tickets may be purchased by the members of the club, or admission, 25 cents, may be paid at the door. The program will begin at 2.30.

The study club has received a gift of 112 books from the women of Pedro Miguel, being a portion of the library of the Pedro Miguel Woman's Club, purchased in 1908. The library has been kept well up to date and the volumes include many desirable works of fiction, as well as standard works. This gift brings the number of books in the study club library up to 300. The library is open to nonmembers of the club upon payment of a deposit of \$1, United States currency, this money to be returned upon the withdrawal of the depositor's name from the librarian's list. The books are kept at the home of Mrs. Mark White, house No. 31, Tivoli district, Ancon.

The regular dance of the Cristobal Dancing Club will be held on Saturday, June 14. Membership card or invitation must be presented at the door.

Church Notes.

The Reverend Alfred B. DeRoos, an American missionary connected with the Baptist Church, is conducting evangelistic meetings in the churches of the Canal Zone. Mr. DeRoos arrived on the Isthmus in May, and held missions in New Gatun, and Colon in the churches under the direction of the Rev. S. Witt. On Sunday, June 1, a mission was begun in the Baptist Church, Culebra, meetings being held every evening during the week. This mission has been very successful, the church being crowded every evening. The special services will continue in Culebra until after the middle of June, and following this, a series of meetings will be held in Cucaracha, Haut Obispo, and Matachin. Rev. Mr. DeRoos has been engaged in missionary and evangelistic work in Central America since 1896, working for many years in Nicaragua. Since 1911, he has been in Costa Rica, making his headquarters at San José.

There will be a sacred concert in aid of the new organ fund at St. Mark's Church, Culebra, on Sunday afternoon, June 15. The music will be given by the choir of the church. The organ has been ordered and the entertainment is being given to pay the remaining sum for its purchase.

Tennis Tournament.

The final Isthmian Tennis Association tournament for the season of 1913, in singles, held at Ancon, June 8, was won by J. T. Neely, representing the Gatun Tennis club. The summary follows:

J. T. Neely, representing Gatun, defeated J. W. Ross, representing the Ancon Hospital club, 3-6, 8-6, 7-5.

C. E. Nevius, representing the Pacific Club, defeated George Newbold, representing the Empire club, 8-6, 6-3.

E. W. Tupper, representing the Culebra club, defeated J. B. Shropshire, representing the Colon club, 6-3, 6-2.

J. T. Neely defeated C. E. Nevius 7-5, 6-3.
D. T. Edwards, representing the Tivoli club, defeated E. W. Tupper, 6-1, 8-6.
J. T. Neely defeated D. T. Edwards 6-1, 6-0.

Sale of Carpenter Tools, Cloth, Etc.

CULEBRA, C. Z., June 4, 1913.

The following articles on hand at the Mount Hope storehouse for obsolete material, are offered for sale to employees at prices indicated:

ARTICLES.	Each
49 Awls, Brad handled.....	\$.05
115 Bits, Auger Spur 5/16".....	.10
104 Bits, Auger Spur 7/16".....	.10
119 Bits, Auger Spur 9/16".....	.10
163 Bits, Auger Spur 3/4" and 11/16".....	.10
155 Bits, Auger Spur, 13/16".....	.10
135 Bits, Auger Spur 3/4" and 1".....	.10
176 Bits, Auger Spur 15/16".....	.15
25 Bits, Auger Spur 1, 1 1/4, 1 1/2, and 2".....	15 and 20
197 Chisels, Firmer Socket 1/2".....	.10
6 Chisels, Firmer Socket 3/4".....	.15
176 Chisels, Firmer Socket 1".....	.15
152 Chisels, Firmer Socket 1 1/4".....	.20
281 Chisels, Firmer Socket 1 1/2".....	.20
266 Chisels, Firmer Socket 1 3/4".....	.20
766 Gimlets, Nail, No. 1.....	.01
19 Gauges, nickel plated, No. 2333 for planes.....	.10
1,127 Gauges, Mortise, No. 73, 6".....	.20
257 Knives, Draw, 12".....	.40
5 Mallets, wood, without handles.....	.05
242 Planes, iron block.....	.35
262 Planes, Fore Wood 2 1/4" cut.....	.35
5 Planes, Fore Wood 2 1/2" and 2 3/4" cut.....	.35
12 Planes, Fore Wood 2 3/4" cut, all wood.....	.35
12 Planes, Jack 16" long.....	.35
23 Planes, Jack 2" cut.....	.55
112 Planes, Jack 2 1/4" cut.....	.55
86 Planes, Jack 2 1/2".....	.55
30 Planes, Jointer 2 1/4" cut.....	.20
36 Planes, Rabbitt 3/4" cut.....	.10
274 Planes, Rabbitt 1" cut.....	.10
33 Planes, Smooth 8" long.....	.35
14 Planes, Smooth 2 1/4" cut.....	.35
30 Sets, Nail.....	.05
68 Saws, Hand Rip, 28".....	.60
209 Squares, Bevel sliding 10".....	.10
1,093 yards Bobinette, White, 36" (bolt only).....	.07
42 yds. Canton flannel (one piece).....	.50
10 yds. Kersey, heavy (one piece) 56".....	2.20
134 yds. Serge, white, 36" (bolt only).....	.20
2,301 Pans, Dust.....	each. .10

The above articles are open for inspection any working day between the hours of 7 to 11 a. m., and 1 to 5 p. m., and may be purchased for cash upon application to the Depot Quartermaster, Mount Hope.

R. E. Wood,
Chief Quartermaster.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, June 7, 1913. All heights are in feet above mean sealevel.

DAY AND DATE	STATIONS.			
	Vigia.	Alhajuela	Gamboa.	Gatun Lake.
Sun., June 1.....	127.2	93.6	49.1	48.5
Mon., June 2.....	126.6	93.0	48.5	48.4
Tues., June 3.....	132.1	96.6	50.0	48.3
Wed., June 4.....	130.4	96.2	50.1	48.6
Thurs., June 5.....	127.2	93.5	48.9	48.7
Fri., June 6.....	127.5	93.0	48.8	48.7
Sat., June 7.....	127.8	93.8	48.9	48.7
Height of low water to nearest foot.....	125.0	91.0	44.0	

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending June 21, 1913, (75th meridian time):

DATE.	High	Low	High	Low
	A.M.	A.M.	P.M.	P.M.
June 15.....	12.23	6.33	12.45	7.08
June 16.....	1.27	7.31	1.40	8.03
June 17.....	2.24	8.27	2.35	8.55
June 18.....	3.17	9.18	3.24	9.43
June 19.....	4.03	10.06	4.10	10.30
June 20.....	4.47	10.52	4.55	11.15
June 21.....	5.30	11.37	5.37	11.58

OFFICIAL CIRCULARS.

Bills for Labor and Material for Individuals and Companies.

CULEBRA, C. Z., June 9, 1913.

CIRCULAR No. 455-A:

Circular No. 455, dated August 9, 1912, is hereby modified to require the itemizing in detail of charges for labor and material appearing on bills rendered for work performed for individuals and companies only when specifically required by the request covering the performance of the work.

When the rendering of itemized bills is requested by individuals and companies, the prescribed surcharge on material will be increased by five per cent and the prescribed surcharge on labor will be increased by ten per cent, to cover the cost of the additional clerical labor.

All bills covering work performed for the purpose of remedying defects in supplies or equipment purchased under contract, the cost of which is to be charged to a contractor, will be rendered in complete detail and only the surcharge heretofore prescribed on material and labor will be applied.

H. F. HODGES,
Acting Chairman, Isthmian Canal Commission,
Second Vice President, Panama Railroad Company.

Acting Manager of the Hotel Washington.

PANAMA RAILROAD COMPANY,

OFFICE OF GENERAL SUPERINTENDENT.

COLON, R. P., June 2, 1913.

CIRCULAR No. 98:

TO ALL CONCERNED:

Effective today, June 2, Mr. J. D. Bennett is appointed acting manager of the Hotel Washington, vice Mr. P. T. Murphy.

J. D. PATTERSON,
General Superintendent.

Findings in Court Martial.

HEADQUARTERS, EASTERN DEPARTMENT,
GENERAL COURT MAR- } GOVERNORS ISLAND,
TIAL } NEW YORK CITY,
ORDERS, No. 417. } May 21, 1913.

Before a general court martial which convened at Camp E. S. Otis, C. Z., pursuant to paragraph 4, Special Orders, No. 3, Headquarters, Eastern Department, February 18, 1913, was arraigned and tried:

Private William H. Guthrie, Company E, Tenth Infantry.

Charge.—Conduct to the prejudice of good order and military discipline, in violation of the 62d Article of War.

There are 12 specifications under the charge which are not published, since they allege slanderous statements by the accused concerning a young lady residing at Las Cascadas, Canal Zone, Panama.

PLEAS.

To Specification 1: "Not guilty."
To Specification 2: "Not guilty."
To Specification 3: "Not guilty."
To Specification 4: "Not guilty."
To Specification 5: "Not guilty."
To Specification 6: "Not guilty."
To Specification 7: "Not guilty."
To Specification 8: "Not guilty."
To Specification 9: "Not guilty."
To Specification 10: "Not guilty."
To Specification 11: "Not guilty."
To Specification 12: "Not guilty."
To the Charge: "Not guilty."

FINDINGS.

Of Specification 1: "Guilty, with the exception of the words 'Bas Obispo' and 'Gorgona,' and of the excepted words Not Guilty."

Of Specification 2: "Guilty."
Of Specification 3: "Guilty."
Of Specification 4: "Not Guilty."
Of Specification 5: "Guilty."
Of Specification 6: "Guilty."
Of Specification 7: "Guilty."
Of Specification 8: "Guilty."
Of Specification 9: "Guilty."
Of Specification 10: "Guilty."
Of Specification 11: "Guilty."
Of Specification 12: "Not Guilty."
Of the Charge: "Guilty."

SENTENCE.

"To be dishonorably discharged the service of the United States, forfeiting all pay and allowances due him, and to be confined at hard labor at such place as the reviewing authority may direct for three (3) years; this sentence to be published on the Canal Zone, Panama."

The sentence is approved and will be duly executed. Fort Jay, N. Y., is designated as the place of confinement, but pending further orders this general prisoner be held at Camp E. S. Otis, Canal Zone. (711 D. J. A.)

By command of Major General Barry:

W. G. HAAN,
Official: Lieut.-Colonel, General Staff,
W. A. SIMPSON, Chief of Staff,
Adjutant General,
Adjutant.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The moving picture schedule for the week June 16 to 21 is, as follows: Monday, Gorgona; Tuesday, Cristobal; Wednesday, Culebra; Thursday, Corozal; Friday, Empire and Porto Bello; Saturday, Gatun.

COROZAL.

The high score prize in duckpins for the month of May was won by Fred Whiston.

A local tenpin tournament was started on June 2. Mr. W. L. Dalton succeeds Mr. M. C. Schaffer, as manager of the pool and billiard room, the latter having left for the United States on June 2. Mr. Beall takes Mr. Dalton's place with Mr. Ruggles as manager of the bowling alleys.

One hundred and seventy-five people were present at the sacred concert given by the Mary Lyon Concert Company on Sunday, June 8.

CULEBRA.

The following high scores in duckpins were made during the past week: Bechem 109; Kiernan 101, 104; Case 102, 103, 112, 110, 102. High scores bowled in tenpins: Warner 204; Case 202; Harrington 214.

A special moving picture exhibition will be given on Friday night, June 13, showing the Panama carnival, a trip through Ceylon, the making of the first American flag, and the naval battle between Paul Jones and the British, the entertainment consisting of several reels. The usual prices will obtain.

Mr. Sandrook, the new barber, arrived on June 8. His hours are from 9.30 till 10.30; 11.30 to 4.30; and 5.30 till 10 p. m.

EMPIRE.

The return engagement of the Lyon Concert Company will take place on Friday evening, June 13. An entirely new program will be given.

The recent tenpin bowling tournament had an entry of thirty men. They divided into six teams, each taking the name of one of the baseball teams. Each team competed against the other teams twice. The standing was, as follows:

Team.	Won.	Lost.	P. C.
Giants.....	21	9	.700
Senators.....	19	11	.633
Athletics.....	18	12	.600
White Sox.....	14	16	.467
Tigers.....	9	21	.21
Cubs.....	9	21	.300

The members of the winning team were Huson (captain), Hobbs, Johnson, Burwell, Rhodes. High score, made by Huson, 243; high three games, by Huson, 604.

There will be a special moving picture entertainment on Monday night, June 16.

GORGONA.

A special moving picture exhibition will be given on Thursday evening to which every one is invited. Special music will be given.

The high school graduating class of the Canal Zone presented the play, "She stoops to conquer," on Friday evening to a good-sized audience.

Members moving to other towns along the Canal Zone are requested to withdraw their library deposit before they leave.

The men that are interested in volleyball meet four times a week, from 5.15 to 6.30, and are in good shape to meet the Culebra team this week. A practice game played between the office force and the draftsmen resulted in 4 to 1 in favor of the draftsmen. Points were 104 to 62. The following was the line-up:

Draftsmen—King, Ellington, Goree, and Whipple, Office Force—Taylor, Herring, Swanson, and Johnson. (Referee McFee, scorer Kramer).

The regular gymnasium class meets every week.

GATUN.

The chess match between Gatun and Corozal was played at Gatun, with the following results:

Gatun.	Won.	Lost.	Corozal.	Won.	Lost.
Logan.....	1	1	Snarrard.....	1	1
Bull.....	1	1	Fields.....	1	1
Honer.....	2	0	Hall.....	0	2
McQueen.....	0	2	Morehead.....	2	0
Morgan.....	2	0	Wechler.....	0	2
Brown.....	1	1	Kingsbury.....	1	1
Shopshire.....	0	2	Gartrell.....	2	0

Total..... 7 7 Total..... 7 7

A return match will be played in the near future. Ladies' night was observed in the Gatun bowling alleys on Wednesday night, June 11.

Gatun defeated Empire in a closely contested game of indoor baseball on Saturday, June 7, the final score being Gatun 28, Empire 19.

Dr. Frederic Poole of Philadelphia gave an interesting address on "Modern China and the revolution,"

on Thursday, June 5. He held the attention of his audience closely, and many expressed the hope that he would return to the Isthmus and lecture again.

The high school dramatic club, under the direction of Prof. C. C. Carr, will present the play, "She stoops to conquer," at the clubhouse on Friday night, June 13. Y. M. C. A. members will be admitted free; nonmembers will be charged 50 cents, children 25 cents.

The Marines from Bas Obispo will play the Gatun indoor baseball team at the clubhouse on Saturday night, June 14. This is the first visit of the Marines to Gatun, and as they have one of the best teams in the Isthmian League, the spectators are promised a good game.

CRISTOBAL.

The next moving picture date will be Friday night, June 13.

Fifty new books have just been placed in the library. Those interested in the track and field meet to be held on July 4 are urged to meet at the clubhouse on Tuesday and Thursday nights.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission and Panama Railroad Company, arrived at the ports of Cristobal and Colon during the week ending June 7:

Tivies, June 1, from New York, with 23 reels electric cable, 68 cases electrical material, 10 cases gate moving machinery, for First Division; 178 tons structural steel, Second Division; 16 cases structural steel, emergency dams; 93 tons structural steel, Panama Railroad Company; 84 crates asbestos shingles, Fortifications; 13 cases tape fuse, 1,229 bundles steel bars, 18 cases brass rods, 12 crates water closets, for stock.

Tagus, June 1, from New York, with 185 bundles galvanized roofing, for stock.

Allianca, June 2, from New York, with 15 bundles double trees, 10 barrels compound, 16 cases toe calks, 10 bundles ladders, 133 kegs horse shoes, 55 kegs wire nails, 80 cases signal oil, 275 bundles tie plates, 31 barrels glassware, 20 cases copper wire, 10 cases steel bars, 43 barrels glass jugs, for stock; 3,500 pieces hollow tile, Second Division; 76 cases electrical material, First Division; 102 pieces cast iron pipe, Atlantic Division; 587 bundles steel bars, Fortifications; and a miscellaneous cargo, the whole consisting of 5,470 packages, weighing 350 tons.

Parissima, June 2, from New Orleans, with 684 barrels paving bricks, Panama Railroad Company; 1,318 pieces yellow pine lumber, 273 pieces white oak lumber, Mechanical Division; 322 pieces cross ties, 12,700 pieces yellow pine lumber, 172 pieces piling, 150 sacks dairy feed, 18 rolls cotton duck, 18 pieces steamshovel castings, 10 cases hardware, for stock.

Prinz August Wilhelm, June 2, from New York, with 75 bundles truck springs, 10 cases electrical material, Mechanical Division; 50 packages buoy parts, Light-house Division; 55 cases paper, 400 cases soap polish, for stock.

Zacapa, June 4, from New York, with 99 pieces structural steel, Panama Railroad Company; 28 packages valve machinery, First Division; 30 cases deck brushes, 1,033 bundles steel bars, 111 packages switch parts, 15 cases hardware, for stock; 1,044 pieces structural steel, Second Division.

Turriaba, June 5, from New Orleans, with 86 pieces white oak lumber, 699 pieces yellow pine lumber, 6 crates coal screens, Mechanical Division; 400 cases scouring bar, 18 pieces cast iron pipe, 697 drums oils, 810 cases oils and greases, 318 bales straw, 197 pieces lumber, for stock.

The total value of material received during the month of May was \$1,359,081.29 distributed, as follows:

Mount Hope (stock), \$270,836.88; Atlantic Division, \$109,713.02; First Division, Chief Engineer's office,

\$505,774.16; Second Division, Chief Engineer's office, \$185,596.23; Fourth Division, Chief Engineer's office, \$2,435.54; Fifth Division Chief Engineer's office, \$98,419.50; Sixth Division, Chief Engineer's office, \$9,418.40; Mechanical Division, \$123,583.79; Sanitary Department, \$8,213.51; Civil Administration, \$511.27; Department of Law, \$290.50; Examiner of Accounts, \$450; Disbursing Officer, \$232.17; Fortifications, \$9,197; Panama Railroad Company, \$34,409.32; Total \$1,359,081.29. The material came forward in 40 steamers; total weight of cargo, exclusive of lumber, pilings and ties, being 33,334 tons.

Rainfall from June 1 to June 7, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	1.26	4	2.48
Balboa.....	.88	4	1.66
*Miraflores.....	1.30	4	2.41
Pedro Miguel.....	1.03	4	2.99
Rio Grande.....	.66	4	2.09
<i>Central Section—</i>			
Culebra.....	.60	4	2.64
*Camacho.....	1.02	4	2.87
Empire.....	3.36	7	4.93
Gamboa.....	.61	4	1.62
*Juan Mina.....	3.19	5	4.85
Alhajuela.....	2.11	3	3.46
*El Vigia.....	1.96	3	3.67
*Gorgona.....	.85	5	1.51
*Frijoles.....	.58	3	2.59
*Monte Lirio.....	1.19	1	3.18
<i>Atlantic Section—</i>			
Gatun.....	1.70	1	5.13
*Brazos Brook.....	1.72	5	4.55
Colon.....	1.84	4	5.45
Porto Bello.....	1.56	3	3.88

*Standard rain gage—readings at 5 p. m., daily—automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., June 6.

May Rainfall for Three Years.

STATIONS.	1911	1912	1913	Station Av.	Years of record	Rainy days 1913
<i>Pacific Section—</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>		
Ancon.....	11.04	10.71	8.27	8.93	15	19
Balboa.....	8.85	9.56	8.04	7.27	17	19
Miraflores.....	10.16	7.60	12.33	9.85	5	25
Pedro Miguel.....	9.57	6.92	13.18	11.07	6	23
Rio Grande.....	16.89	7.18	12.33	11.07	9	24
<i>Central Section—</i>						
Culebra.....	14.86	8.15	11.74	11.18	22	24
*Camacho.....	18.11	6.15	16.03	12.04	7	21
Empire.....	13.74	6.21	11.74	9.87	0	24
Gamboa.....	14.53	7.94	15.13	11.05	32	26
Juan Mina.....	15.90	10.86	13.20	13.32	3	22
Alhajuela.....	16.11	13.43	12.63	12.74	13	26
El Vigia.....	10.62	12.81	13.35	12.56	5	24
Gorgona.....	17.56	8.03	13.82	12.51	9	25
Frijoles.....	10.28	21.07	15.68	12.30	2	30
Trinidad.....	18.20	11.79	17.73	14.69	6	28
Monte Lirio.....	19.70	8.34	16.29	14.67	6	22
<i>Atlantic Section—</i>						
Gatun.....	19.14	13.83	17.06	15.82	9	28
Brazos Brook.....	19.92	11.45	18.77	13.98	7	28
Colon.....	17.13	12.03	22.60	12.65	43	26
Porto Bello.....	19.25	16.65	30.51	17.74	6	28

WEATHER CONDITIONS, CANAL ZONE, MAY, 1913.

The general rains that fell during the first week of May marked the beginning of the 1913 rainy season. The rainfall on the Isthmus during May was above normal at all stations, except Ancon, Juan Mina, and Alhajuela. The monthly totals ranged from 8.04 inches at Balboa to 30.51 inches at Porto Bello. The maximum precipitation recorded in 24 consecutive hours was 10.65 inches at Porto Bello on May 14-15. This 24-hour record has been exceeded once only on the Isthmus during the period covered by Commission records.

Approximately normal conditions of air temperature, relative humidity, and atmospheric pressure prevailed during the month. The average cloudiness and wind movement were well above normal. There was a marked increase in night foginess with the return of the rainy season weather conditions. Of the fogs observed 61 per cent were dissipated by 6.30 a. m.; 90 per cent by 7.30 a. m.; and 100 per cent by 8.30 a. m.

The following table summarizes the weather conditions for the month:

STATIONS.	Press're (reduc'd to mean of 24 hours.)	Temperature.					Precipitation.			Wind.					
		Mean.	Maximum.	Date.	Minimum.	Date.	Mean relative humidity.	Total inches.	Station aver- age.	Number of rainy days.	Total move- ment (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Colon.....	29.870	79.4	86	May 6	73	M'y 28	87	22.60	12.65	26	6,875	N.	30	S. W.	May 21
Culebra.....	29.850	79.5	91	May 5	69	M'y 27	91	11.74	11.18	24	4,921	N. W.	26	S. E.	May 7
Ancon.....	29.838	80.2	95	May 1	70	M'y 27	88	8.27	8.93	19	5,002	N. W.	20	N.	May 1

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning June 11, 1913:

FRESH MEATS.		Price
Mutton—Stewing, per pound.....	6	
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9	
Entire forequarter (not trimmed, 10 pounds and over), per pound.....	8	
Leg (8 to 10 pounds), per pound.....	17	
Cutlets, per pound.....	18	
Short cut chops, per pound.....	20	
Lamb—Stewing, per pound.....	6	
Entire forequarter, neck trimmed off, per pound.....	9	
Legs (5 to 8 pounds), per pound.....	20	
Chops, per pound.....	24	
Cutlets, per pound.....	24	
Veal—Stewing, per pound.....	10	
Shoulder, for roasting (not under 4 pounds), per pound.....	12½	
Chops, shoulder, per pound.....	17	
Chops, per pound.....	26	
Loin for roasting, per pound.....	26	
Cutlets, per pound.....	30	
Pork—Loin chops or roast, per pound.....	17	
Pigs Head, about 6½ lbs., per pound.....	10	
13 lbs., per pound.....	10	
Pigs Backbone, per pound.....	15	
beef—Salt, per pound.....	2	
Soup, per pound.....	5	
Stew, per pound.....	8	
Plate, per pound.....	9	
Corned, No. 1, per pound.....	14	
Corned, No. 2, per pound.....	12	
Chuck, roast, 3 lbs. and over, per pound.....	12	
Rib roast, second cut (not under 3½ pounds), per pound.....	16	
Rib roast, first cut (not under 3 pounds), per pound.....	18	
Sirloin roast, per pound.....	19	
Rump roast, per pound.....	19	
Porterhouse roast, per pound.....	20	
Steak, Chuck, per pound.....	12½	
Round, per pound.....	13	
Rib, per pound.....	18	
Sirloin, per pound.....	19	
Rump, per pound.....	19	
Porterhouse (not less than 1½ pounds), per pound.....	20	
Tenderloin (Western) per pound.....	30	
MISCELLANEOUS		
Livers—Beef, per pound.....	11	
Calf, each.....	60	
Half, each.....	30	
Steak, Hamburger, pkg.....	13	
Sausage—Bologna, per pound.....	13	
Frankfurter, per pound.....	13	
Liebowurst, per pound.....	13	
Devonshire Farm, per pound.....	20	
Pork sausage meat, per pound.....	20	
Sweetbread, beef, per pound.....	40	
Eggs, fresh, dozen.....	27	
one-half dozen only.....	14	
Bluefish, per pound.....	15	
Halibut, fresh, per pound.....	15	
POULTRY AND GAME.		
Chicken—Fancy roasting, milk fed, large, each.....	1.40	
Fancy roasting, milk fed, med., each.....	1.10	
Fancy roasting, corn fed, about 5½ pounds, each.....	1.25	
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00	
Fowls, each.....	1.00	
Ducks, (Western, about 4½ pounds), each.....	1.25	
Broilers, milk fed, each.....	.70	
Broilers, corn fed, each.....	.60	
Turkeys, per pound.....	.26	
Squabs, each.....	.50	
Rabbits, skinned, each.....	.30	
Ducks, blackhead, pair.....	.60	
Partridges, per.....	1.30	
Grouse, per pair.....	1.30	
Pheasants, per pair.....	1.30	
CURED AND PICKLED MEATS.		
Ham—Sugar cured, per pound.....	.20	
Sliced, per pound.....	.22	
Half, for boiling, per pound.....	.21	
Boiled, per pound.....	.28	
Hocks, per pound.....	.18	
Beef, salt, family, per pound.....	.12	
Bacon—Breakfast, whole piece, per pound.....	.25	
Sliced, per pound.....	.26	
Ham, lunch, per pound.....	.32	
Pork, salt, family, per pound.....	.14	
Ox tongues, each.....	1.00	
Pigs feet, per pound.....	.9	
Tongues, per pound.....	.18	
DAIRY PRODUCTS.		
Butter—Creamery, special, per pound.....	.34	
Shredded Fats, extra fancy, per lb.....	.46	
Cheese—Philadelphia cream, cake.....	.10	
Roquefort, per pound.....	.35	
Young America, per pound.....	.22	
Swiss, per pound.....	.28	

Price.	
Cheese—Edam, each.....	1.00
Parmesan, per pound.....	.35
Gouda, per pound.....	.30
Snappy, per cake.....	.10
Milk (Certified), per bottle.....	**20
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	.125
1-gallon.....	.150

VEGETABLES AND FRUITS.

Beets, per pound.....	3
Celery, per head.....	11
Cabbage, per pound.....	3
Cucumbers, per pound.....	*6
Carrots, per pound.....	3
Egg Plant, per pound.....	10
Lettuce.....	12
Onions, per pound.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	2
Parsnips, per pound.....	3½
Parsley, bunch.....	5
Rhubarb, per pound.....	4
Squash, per pound.....	*4
Turnips, per pound.....	3
Tomatoes.....	10
Apples, per pound.....	6
Grape fruit, tropical, each.....	4
American, each.....	8
Lemons, dozen.....	24
Limes, per 100.....	80
Oranges, Jamaica, per dozen.....	12

Misdirected Letters.

ANCON, C. Z., June 11, 1913.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Andrade, Manuel L. R.	Mann, Mrs. T. S.
Balcutine, Herbert E.	Mitchell, William T.
Beatty, Branch	Orewiler, Mrs. E.
Bottenfield, Drake	Pinto, Tom
Burns, Robert	Pode, Steve
Burbridge, James	Povsky, Paul
Cherry, William	Rabiteau, Edd
Curran, Miss Mary E.	Rose, Charles
Eddington,	Shay, Chas. D.
Gittens, Thornton	Straub, Mrs. Harmian
Grosso, Antonio	Udry, Joe
Hattendorf, Fred	Underwood, Edwin
Herring, Mrs. Ben	Vignault, F. H.
Hodges, Benjamin O.	Walrond, Miss Alice
Humble, V. R.	Waters, Frank
Jones, W. C.	Woodsum, Mrs. Edith (2)
Logan, Frank	Yungandreas, John
Mgnuson, Charles	

Legal Notice.

United States of America } First Judicial Circuit.
Canal Zone.

The following named Americans citizens died intestate leaving personal property within the Canal Zone to the amount stated:

	U. S. currency.
Andrew R. Murphy.....	\$3.70
John Ryan.....	2.40
George Peter.....	.83
John Williams.....	2.00
Michael Coogan.....	29.50
Harry Tafel.....	8.00
Henry G. Day.....	63.58

The collector of revenues has filed a petition for the escheat of the above named estates, in accordance with Section 779 of the Code of Civil Procedure.

Notice is hereby given to all heirs or creditors of the above estates to appear before this Court in the courthouse at Ancon, on July 12, 1913, at 9 o'clock a. m., to establish their claims or to show cause why the said estates should not escheat to the Government of the Canal Zone.

WALTER EMERY,
Circuit Court Clerk.

WANTED—Stenographer and typewriter, with some knowledge of accounting. Only such need apply as are employed by the Isthmian Canal Commission or Panama railroad and can secure a transfer from the department in which they are now working; or others having civil service status. Salary, \$150 per month. Apply to J. C. Luitwieler, secretary of the Joint Land Commission, National Palace, Panama, on Saturday morning, June 14.

LOST—Pair of rimless spectacles, tinted glass, in open end spectacle case, with the name of W. F. Beyer and Son, Punxsutawney, Pa., on case. Lost either on train between Corozal and Gatun, or at Gatun. Finder requested to return it to Sidney S. Smith, Corozal, C. Z.

LOST—Canal medal and bar in Bas Obispo, or on train No. 25 to Colon, on Sunday, June 1. Reward for return to J. H. Heckman, Bas Obispo.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Advance.....	P. R. R. Saturday.....	June 7
Panama.....	P. R. R. Friday.....	June 13
Allianca.....	P. R. R. Thursday.....	June 19
Colon.....	P. R. R. Thursday.....	June 26
Advance.....	P. R. R. Wednesday.....	July 2
Panama.....	P. R. R. Tuesday.....	July 8
Allianca.....	P. R. R. Monday.....	July 14
Colon.....	P. R. R. Saturday.....	July 19
Advance.....	P. R. R. Saturday.....	July 26
Panama.....	P. R. R. Friday.....	Aug. 1

CRISTOBAL TO NEW YORK.

Colon.....	P. R. R. Saturday.....	June 14
Advance.....	P. R. R. Thursday.....	June 19
Panama.....	P. R. R. Wednesday.....	June 25
Allianca.....	P. R. R. Tuesday.....	July 1
Colon.....	P. R. R. Tuesday.....	July 8
Advance.....	P. R. R. Monday.....	July 14
Panama.....	P. R. R. Sunday.....	July 20
Allianca.....	P. R. R. Saturday.....	July 26
Colon.....	P. R. R. Thursday.....	July 31
Advance.....	P. R. R. Thursday.....	Aug. 7

NEW YORK TO COLON.

Almirante.....	U. F. C. Wednesday.....	June 4
Carrillo.....	U. F. C. Saturday.....	June 7
Prinz Joachim.....	H.-A. Saturday.....	June 7
Oruba.....	R. M. Saturday.....	June 7
Santa Marta.....	U. F. C. Wednesday.....	June 11
Pastores.....	U. F. C. Saturday.....	June 14
Metapan.....	U. F. C. Wednesday.....	June 18
Thames.....	R. M. Saturday.....	June 21
Tivives.....	U. F. C. Saturday.....	June 21
Prinz August Wilhelm.....	H.-A. Saturday.....	June 21
Zacapa.....	U. F. C. Wednesday.....	June 25
Emil L. Boas.....	H.-A. Saturday.....	June 28
Sixaola.....	U. F. C. Saturday.....	June 28

COLON TO NEW YORK.

Zacapa.....	U. F. C. Thursday.....	June 12
Emil L. Boas.....	H.-A. Tuesday.....	June 17
Sixaola.....	U. F. C. Tuesday.....	June 17
Almirante.....	U. F. C. Thursday.....	June 19
Trent.....	R. M. Tuesday.....	June 24
Carrillo.....	U. F. C. Tuesday.....	June 24
Prinz Joachim.....	H.-A. Tuesday.....	June 24
Santa Marta.....	U. F. C. Thursday.....	June 26
Pastores.....	U. F. C. Tuesday.....	July 1
Metapan.....	U. F. C. Thursday.....	July 3

NEW ORLEANS TO COLON.

Abangarez.....	U. F. C. Saturday.....	June 7
Heredia.....	U. F. C. Wednesday.....	June 11
Atenas.....	U. F. C. Saturday.....	June 14
Parismina.....	U. F. C. Wednesday.....	June 18
Turrialba.....	U. F. C. Saturday.....	June 21
Cartago.....	U. F. C. Wednesday.....	June 25
Abangarez.....	U. F. C. Saturday.....	June 28

COLON TO NEW ORLEANS.

Turrialba.....	U. F. C. Thursday.....	June 12
Cartago.....	U. F. C. Saturday.....	June 14
Abangarez.....	U. F. C. Thursday.....	June 19
Heredia.....	U. F. C. Saturday.....	June 21
Atenas.....	U. F. C. Thursday.....	June 26
Parismina.....	U. F. C. Saturday.....	June 28

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays at 3 p. m.; ships for New York via Kingston on Tuesdays at 10 a. m. and Thursdays at 10 a. m.; for Bocas del Toro on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m.; and for Limon direct, Tuesdays at 3 p. m.

Hamburg-American steamers sail for New York, via Kingston and Santiago de Cuba, on Tuesdays; the Prinz Joachim and Prinz August Wilhelm at 10 a. m., and the Emil L. Boas and Carl Schurz at 2 p. m.

The following ships arrived at, or departed from the port of Balboa during the week ending June 7:

Arrivals—June 1, Huallaga, from Valparaiso; June 4, Huasco, from Valparaiso; June 4, Manavi, from Guayaquil; June 7, Santa Rita, from Port La Hartford. Departures—June 1, Mantaro, to Valparaiso; June 2, Guatemala, to Valparaiso; June 3, Pennsylvania, to San Francisco; June 4, Quilo, to Guayaquil; June 5, Plevades, to San Francisco.

CANAL



RECORD

Volume No. VI.

ANCON, CANAL ZONE, WEDNESDAY, JUNE 18, 1913.

No. 43.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is published free of charge, one copy each to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Last Section of Atlantic Entrance Excavation.

The lower guard gates of Gatun Locks were brought to practical completion and closed on June 14. They protect the lower and middle lock chambers from inundation by water from the sea. Within a few hours after their closing, two pipeline suction dredges began to pump water into the forebay and when the forebay has been filled to sea-level the dredges will proceed with the removal of the barrier between it and the completed portion of the Atlantic entrance channel. Dredge No. 83, which has been on the ground in the approach at 55 feet below sealevel since it pumped out the forebay to allow the construction of center guide and flare walls, is afloat and will take part in the removal of the barrier.

Canal Excavation in May.

During the month of May, the grand total of Canal excavation passed the 200,000,000-cubic yard mark, the exact total to June 1 being 200,737,132 cubic yards, leaving to be excavated 17,401,167 cubic yards.

The total excavation for May was 2,779,532 cubic yards, as compared with 2,506,916 cubic yards for the corresponding month last year, and 2,570,592 cubic yards in May, 1911.

The dry excavation last month amounted to 1,254,039 cubic yards, entirely by steamshovels. The dredges established a new record for one month's performance on the Canal by excavating 1,525,493 cubic yards.

In the Atlantic Division, the total excavation was 963,109 cubic yards. Of this amount, all but 5,220 cubic yards consisted of material dredged from the Atlantic entrance, a large quantity of which was silt.

The total excavation in the Central Division was 921,000 cubic yards, 896,600 cubic yards from the Culebra Cut section, and the remainder from diversions.

In the Fifth Division, (Pacific section) the total excavation amounted to 895,423 cubic

yards, 331,210 by steamshovels and 564,213 by dredges. Steamshovels excavated 3,905 cubic yards from the site of Miraflores Spillway, 66,291 cubic yards from the Balboa terminal site, and 261,014 cubic yards from the Canal prism, south of Miraflores Locks. The dredges took out 369,703 cubic yards from the Pacific entrance, and 194,510 cubic yards at the terminal basin.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total Excavation.
Dry excavation—	Cu. Yds.	Cu. Yds.	Cu. Yds.
Locks, dam and spillway.	1,829	.....	1,829
Mindi.	.....	.....	.....
Terminal.	.....	.....	.....
Total	1,829	.....	1,829
Wet excavation—			
Atlantic entrance.	685,163	272,726	957,889
Locks, dam and spillway.	3,391	.....	3,391
Terminal.	.....	.....	.....
Total	688,554	272,726	961,280
Total wet and dry excavation	690,383	272,726	963,109

CENTRAL DIVISION.

Dry excavation—			
Culebra Cut.	896,600	.....	896,600
Chagres Section.	24,400	.....	24,400
Diversions	.....	.....	.....
Total	921,000	.....	921,000

PACIFIC DIVISION.

Dry excavation—			
Locks, dam and spillway.	3,905	.....	3,905
Terminals.	53,215	13,076	66,291
Prism	261,014	.....	261,014
Total	318,134	13,076	331,210
Wet excavation—			
Pacific entrance.	369,703	.....	369,703
Miraflores Locks	.....	.....	.....
Diversions	.....	.....	.....
Terminals.	194,510	.....	194,510
Total	564,213	.....	564,213
Total wet and dry excavation	882,347	.....	895,423

TOTAL CANAL EXCAVATION.

Dry excavation	1,240,963	13,076	1,254,039
Wet excavation	1,252,767	272,726	1,525,493
Total	2,493,730	285,802	2,779,532

LOCKS AND DAMS.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	Cu. Yds.	Cu. Yds.
Concrete placed in locks.	13,928	8,100	22,028
Concrete placed in dams and spillways.	717	18,737	19,454
Fill placed in dams.	93,449	12,670	106,119

Mean rainfall along Canal (ten stations), 1.89 inches. By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as prism, diversions, or locks, etc., that is, it represents material taken from the area to be occupied

by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

Wharf Work at New Balboa Harbor.

The number of caissons for the wharves at Balboa sunk to rock during May amounted to 31, the greatest number in any month since the beginning of operations. The total penetration amounted to 1,875 linear feet. The caisson shells are of concrete, with an outside diameter of 8 feet, each foot of penetration necessitating the excavation of about 50 cubic feet of soft material. On one day, a caisson was sunk 37 feet in three hours and 43 minutes, 42 minutes of which were devoted to setting the successive sections.

The work on the quay wall piers has advanced from the east end of the present concrete wharf, through the west toe of the abandoned Sosa dam. Forms and reinforcing steel for the beams and girders to support the floor of the extended quay wall are being placed, and the work of pouring the concrete for them is under way.

Operations at Corozal Farm.

Plowing is in progress at the Corozal farm, and some planting has been done. A part of the farm, which, altogether, contains about 715 acres of land, the greater part of which is the property of the Panama railroad, has been placed under fence, using old iron rails for posts, and barb wire for the enclosure. A nursery for young plants, such as cabbages, tomatoes, eggplant, avocados, mangoes, cassava, etc., has been started at the end of the fenced-in section nearest the village. The soil in this vicinity contains a great many stones, the larger of which are collected and carted off. On a part of the farm, west of the railroad, where there is an hydraulic fill, 1,200 coconut plants, obtained from the interior, will be set out. About 1,500 young banana plants have also been received and set out. Not much has been done so far in planting ordinary garden truck, but it is proposed to utilize an adjacent hillside for the growing of onions, cabbages, and tomatoes, as, during the rainy season, the superabundance of moisture on level ground tends to an excessive growth of tops. There is a promising field of corn to the north of the village, which has been planted along with plantains and papaya, and to which will be added later, pumpkins, making four crops in all from the one piece of ground. It is possible that the raising of fodder corn, with the view of using it in a silo, will be tried later to furnish food for the Ancon dairy herd. The farm contains a number of full grown mango, avocado, and orange trees, but it is planned to add to these

considerably, especially as regards mangoes and avocados.

There are only four inmates at the farm at present. The services of these are utilized as far as possible, but outside help has to be procured to carry on the work. The inmates sleep in the farm building, but take their meals at the silver laborers' mess. The office of the farm is located temporarily in the building containing the offices of the Resident Engineer of the Fifth Division.

Concrete Work in Locks and Spillways.

Concrete work in the Canal locks is nearly completed, the aggregate amount in place at the close of work on June 14, being 4,464,228 cubic yards.

A statement of the concrete laid in the three sets of locks for the Canal, and in Gatun and Miraflores spillways, as of June 14, follows:

GATUN LOCKS.		Concrete laid
June 9.....		504
June 10.....		618
June 11.....		48
June 12.....		374
June 13.....		422
June 14.....		374
Total.....		2,340
Previously reported.....		2,037,621
Grand total.....		2,039,961
PEDRO MIGUEL LOCK.		
June 9.....		6
June 10.....		
June 11.....		
June 12.....		
June 13.....		13
June 14.....		3
Total.....		22
Previously reported.....		921,179
Grand total.....		921,201
MIRAFLORES LOCKS.		
June 8.....		110
June 9.....		25
June 10.....		72
June 11.....		10
June 12.....		40
June 13.....		
June 14.....		12
Total.....		269
Previously reported.....		1,502,797
Grand total.....		1,503,066
GATUN SPILLWAY.*		
June 9.....		72
June 10.....		44
June 11.....		9
June 12.....		74
June 13.....		100
June 14.....		102
Total.....		401
Previously reported.....		227,229
Grand total.....		227,630
MIRAFLORES SPILLWAY.		
June 9.....		1,271
June 10.....		1,334
June 11.....		1,131
June 12.....		195
June 13.....		401
June 14.....		713
Total.....		5,045
Previously reported.....		51,616
Grand total.....		56,661

*Includes hydroelectric station.

Framework of Two Permanent Buildings in Place.

The erection of the steel framework for the permanent planing mill at Balboa has been completed, and that for the pattern storage building is about done. While the erection forces advance on the foundry building, the skeletons now in place are being riveted and painted with two coats of white paint. The planing mill will have a floor space of 49,000 square feet; the pattern storage building, 14,400 square feet, and the foundry,

37,600 square feet. With the rapid advance in this erection, in the excavation for the dry dock, and the advance on the wharves, the outlines of the terminal are becoming distinguishable where recently stood the American and native villages, flanked by a tidal swamp.

Shooting Match.

A match shoot between teams from the Tenth Infantry and United States Marine Corps was held at the new range at Camp E. S. Otis on Sunday, May 15, beginning at 8 a. m. The number of spectators was large, and included people from towns along the line, as well as from the Army and Marine camps.

The members of both the competing teams consisted entirely of officers. Captain Coleman was captain of the Army team, and Captain Beaumont of the Marine Corps team. Lieutenant Crenshaw of the Navy shot in the Marine Corps team.

The Marines finished the 200-yard stage with a lead of 11 points. At the 300-yard stage, the Army gained six points, cutting down the lead of the Marines to five points. In the 200-yard rapid fire, which followed, the Army gained 16 points, giving it a lead of 11 points. At 600 yards, the Army team gained 16 points more, making its total lead at this time 27 points. The Marines gained 13 points on skirmish, leaving the Army team winner of the match by 14 points. The individual scores follow:

TENTH INFANTRY TEAM	200 yds. slow fire.	300 yds. slow fire.	600 yds. slow fire.	200 yds. rapid fire.	Skirmish run.	Total
Maj. Upton.....	42	41	46	42	88	259
Capt. Whitworth.....	45	46	43	41	65	240
Capt. Coleman.....	43	44	46	46	49	228
Lt. Swartz.....	34	39	40	45	73	231
Lt. DeLancey.....	40	42	46	42	71	241
Lt. Stutesman.....	34	43	45	41	67	230
Totals.....	238	255	266	257	413	1,429
MARINE CORPS TEAM						
Capt. Beaumont.....	43	38	34	38	68	221
Capt. Vulte.....	39	39	42	36	64	220
Capt. Fortson.....	42	44	48	40	73	247
Lt. Smith.....	44	42	44	46	72	248
Lt. Crenshaw, U. S. N.	42	45	43	43	73	246
Lt. Osterman.....	39	41	39	38	76	233
Totals.....	249	249	250	241	426	1,415

After the match, Colonel and Mrs. Greene entertained at a buffet luncheon all of the officers and ladies of both camps who were present.

New Chairman, Fourth of July Committee.

The Acting Chairman of the Canal Commission has appointed Mr. Tom M. Cooke, chairman of the executive committee of the Fourth of July celebration, vice Mr. M. H. Thatcher, resigned.

Turning of Seats in P. R. R. Passenger Coaches.

An order was issued to all conductors and collectors on Panama railroad passenger trains on June 9, prohibiting the turning over of seats in any of the first-class coaches, south of Gorgona, unless occupied by at least three passengers. This precludes, in future, the practice of two passengers sitting facing each other, or the turning over of a seat by a single passenger and the placing of his feet thereon, except between points north of Gorgona. In no case will passengers be permitted to turn the seats to sit facing, or to place their feet thereon in the forward first-class coach, known as the ladies' car, of any passenger train.

CULEBRA CUT SLIDES.

Increased Activity During the Past Week.

Slides in the Culebra Cut section have been unusually active during the past week. On Thursday morning, June 12, another downward and upward movement occurred in the break on the east bank of the Cut, opposite Culebra, which overturned shovel No. 260, destroyed all tracks but two, and filled the drainage ditch. This is distinct from the break further north, which first developed on February 5, and in which, since then, five different movements have occurred, each of which upheaved the bottom of the Canal, destroyed construction tracks, and, in some cases, caused damage to the excavation equipment. The last movement left the line of cleavage in clear view in one section of the disturbed area, which now extends nearly back to the last level where terracing operations are in progress, and cracks have developed back of this line. The extreme limit of the break on the east bank is now about 300 feet from the line of the Canal.

Late Friday afternoon, Cucaracha slide again became active, and when the movement ceased, the Cut had been filled across to the 67-foot level on the west side, leaving but one through track in service. The last movement was a repetition of the others that are constantly occurring at this point, the pressure from above forcing in an additional amount as the material is removed at the bottom of the slide. The whole slope is in motion, and some cracks have developed farther back on the hill. On the side of Gold Hill, the slide drops sheer, and as far as is known, the rock buttress remains firm. The rock shoulder in about the center of the face line of the slide, which gave way under the pressure a few months ago, is moving with the remainder of the mass, and is now about 80 feet west of its original position.

Of all the slides in the Culebra Cut section, Cucaracha is, perhaps, the most graphic. The movement can be easily comprehended by a spectator standing on the west bank at Culebra, by comparing it with the proper line of the Canal above and below this point. To the engineers, however, the break on the east bank presents the more difficult problem of the two.

The slide, near La Pita, caused by the Obispo Diversion breaking into the Canal in August, 1912, involving about 250,000 cubic yards, has been nearly removed. A double dike now separates the Canal from the diversion channel.

Between Empire and Bas Obispo, there are half a dozen or more small slides, which the shovels are busy clearing away. Apart from these, and the cleaning up of the bottom, which will probably be done by hand, this part of the Canal is nearly finished. In some of the slides, where the shovels are working close up against a high bank of loose material, the work is attended with a certain amount of peril, on account of the danger of a sudden land slip. The engineer and craneman are kept constantly on the alert for signs of danger, and back their machines away from the spot at the first manifestations.

United Spanish War Veterans.

Chagres Camp will hold a meeting in the lodge hall, Ancon, on Sunday afternoon, June 22, at 3 o'clock.

CANAL MEDAL AND SERVICE BAR LIST.

Below are published the names of American employes of the Isthmian Canal Commission, who completed eight years' service on the Isthmus during the twelve months ending December 31, 1912, and are, in consequence, entitled to receive a third bar. The date shown opposite each name is that from which the bar service is computed.

On this page also will be found the list of employes of the Panama Railroad Company who completed two years of continuous service at some time during the year ending December 31, 1912, and are, in consequence, entitled to medals; also, the lists of employes of the Panama Railroad Company who are entitled to first bars for four years of continuous service; and the lists of employes of the Panama Railroad Company who are entitled to second and third bars for six and eight years of continuous service, respectively, ending during the year 1912.

Heads of divisions are requested to check carefully their lists of American employes on the silver roll, and to report any omissions on the medal lists to the Office of the Chairman, at Culebra.

Medal and bar service begins at the time of an employe's arrival on the Isthmus; not at the time of his departure from the United States.

I. C. C. Third Service Bar
List, 1904-1912.

Name.	1910.
Belt, Josiah.....	May 4
Brewer, William T.....	May 4
Davies, Thomas J.....	May 4
Nichols, Aurin B.....	May 31
Johnson, Natt M.....	June 8
Tenny, Mark W.....	June 8
Wells George M.....	June 8
Wright, Daniel E.....	June 8
Perry, James C.....	June 27
Pierce, Claude C.....	June 27
Gorgas, William C.....	June 28
Kenealy, Patrick.....	June 28
Wood, William M.....	July 5
Richardson, Gibbon O.....	July 9
Beverly, Edward P.....	July 13
Herrick, Alfred B.....	July 13
McDonald, Donald E.....	July 13
Noland, Lloyd.....	July 14
Lundisheff, Alex. A.....	July 15
Emery, Walter.....	July 19
Sinclair, Joseph M.....	July 19
Smith, Eleanor J.....	July 19
Turner, Anna R.....	July 19
Galyon, Charles L.....	July 24
Butters, Charles M.....	July 26
Cooke, Thomas M.....	July 26
Reidy, John J.....	July 26
Boyd, Oscar S.....	Aug. 9
Du Bois, Louis E.....	Aug. 16
Rerdell, M. C.....	Aug. 16
Kiernan, John C.....	Aug. 29
Hummer, Charles D.....	Sept. 10
Parker, Charles.....	Sept. 12
Alexander, Elias E.....	Sept. 14
Meech, Marietta L.....	Sept. 14
Herz, Max.....	Sept. 27
Padgett, Monroe L.....	Oct. 10
Glaw, Robert W.....	Oct. 18
Moore, Frank E.....	Oct. 21
Torbert, William A.....	Oct. 25
Donahue, Daniel F.....	Nov. 1
Parker, Charles L.....	Nov. 1
Riole, Hartley.....	Nov. 1
Prial, Mary.....	Nov. 8
Dennis, Durward W.....	Dec. 1
Conner, M. E.....	Dec. 5
Bates, William H.....	Dec. 6
Kirk, Joseph S.....	Dec. 20
Meehan, John J.....	Dec. 20
Bodette, William.....	Dec. 27
Buchan, George.....	Dec. 27

P. R. R. Service Medal List,
1910-1912.

Name.	1910.
Farley, C. A.....	Jan. 4
Fay, A. E.....	Jan. 4
Page, T. L.....	Jan. 5
Moore, A. I.....	Jan. 6
Hennessy, J. A.....	Jan. 15
Day, J. M.....	Jan. 22
Austin, J. V.....	Jan. 27
Soper, Ira D.....	Feb. 4
Paul, W. B.....	Feb. 8
Adams, H. C.....	Feb. 11
Mendes, R. L.....	Feb. 16
Davis, R. S.....	Feb. 24
Priestly, R. J.....	Mar. 1
Johnson, D. M.....	Mar. 6
Levee, L. C.....	Mar. 10
Macombs, Walter.....	Mar. 16
Clark, E. L.....	Mar. 28
Kopp, W. A. J.....	April 1
Grobe, G. E.....	April 4
Wait, W. W.....	April 7
Grant, A. C.....	April 13
Sargent, E. M.....	April 18
Henkel, W. F.....	April 21
Maxwell, W. H.....	April 21
Crafts, F. M.....	April 23
Hunter, R. B.....	April 23
Hess, B. F.....	April 29
Hanzlick, Jas.....	May 1
Lokerson, A. C.....	May 5
Piper, F. L.....	May 6
Scabill, J. P.....	May 17
Rounds, C. L.....	May 18
Gurnett, E. M.....	May 18
Emmett, H. B.....	May 24
Sexton, W. T.....	May 26
Ames, C. F.....	May 31
Fraser, M. E.....	June 1
Brayton, R. A.....	June 19
Cheatham, H. L.....	June 20
Denny, Frank.....	June 24
Fraser, Gertrude.....	July 19
Roche, G. V.....	July 20
Passalacqua, A. E.....	July 27
Bishop, Irene.....	Aug. 4
Woolfolk E. P.....	Aug. 8
Cannon, C. E.....	Aug. 11
Potts, J. S.....	Aug. 17
Hartman, E.....	Aug. 19
Ilgen, W. F.....	Aug. 29
Cottrell, Burtis.....	Sept. 3
King, J. B.....	Sept. 15

Name. Date.

Hart, H. T.....	Sept. 16
Howell, E. A.....	Sept. 22
Curtis, F. A.....	Sept. 29
Bernsee, W. F.....	Sept. 3
Farr, M. D.....	Oct. 24
Boies, C. A.....	Oct. 31
Wicks, G. A.....	Nov. 4
Greene, A. C.....	Nov. 4
Duncas, Anna M.....	Nov. 16
Booth, Jr., E. G.....	Nov. 22
Malone, P. L.....	Nov. 28
Devore, L. H.....	Dec. 2
Ryan, Anna M.....	Dec. 4
Randolph, E. S.....	Dec. 12
Stahl, J. F.....	Dec. 28

P. R. R. First Service Bar
List, 1908-1912.

Name.	1910.
Dowd, S. H.....	Jan. 9
Whitney, G. M.....	Jan. 12
Cartwright, J. G.....	Jan. 13
Mara, Thos.....	Jan. 17
Kinsman, F.....	Jan. 23
Ferguson, H. L.....	Jan. 25
Weller, J. H.....	Jan. 27
Gross, T. J.....	Jan. 31
Mullen, H. E.....	Mar. 2
Whiteman, E. S.....	Mar. 3
Scoffern, R. F.....	Mar. 6
Hayne, William.....	Mar. 9
Grant, L. P.....	Mar. 14
Hoffman, C. D.....	Mar. 14
McCarthy, J. S.....	Mar. 14
Geenzier, C. H.....	Mar. 18
Herring, G. R.....	Mar. 20
Hart, R. W.....	Mar. 30
Ernst, W. A.....	April 2
Gurnett, M. T.....	April 13
Heald, S. W.....	April 13
Maggard, L. B.....	April 22
Blair, C. A.....	April 24
Geddes, C. J.....	May 16
Paul, C. P.....	May 16
Peirce, E. F.....	May 24
Peirce, Jr., R. T. B.....	May 24
McElroy, A. D.....	May 26
McTucker, E.....	May 27
Wickham, F. W.....	June 2
Grant, H. P.....	June 6
Culbertson, M.....	June 13
Moyer, R. N.....	June 14

Name. Date.

Roos, N. L.....	July 13
Klein, G. M.....	July 17
King, C. J.....	July 20
Dahl, Ole.....	Aug. 5
Bernsee, C. D.....	Aug. 19
Reynolds, T. M.....	Sept. 5
Roberts, R. W.....	Sept. 15
Ott, C. A.....	Sept. 22
Miller, C. C.....	Sept. 23
Hanrahan, T. J.....	Sept. 24
Snapp, C. J.....	Oct. 8
Tankersley, F. E.....	Oct. 23
Patterson, J. A.....	Dec. 16
Johnson, M. W.....	Dec. 20

P. R. R. Second Service Bar
List, 1906-1912.

Name.	1910.
Hoyt, P. G.....	Jan. 4
Arthur, A.....	Jan. 15
Miles, L. E.....	Jan. 22
Thornton, E. B.....	Feb. 1
Bain, W. H.....	Feb. 1
Newbold, Jr., W. R.....	Feb. 2
Clisbee, F. A.....	Feb. 13
Henderson, P. H.....	Feb. 17
Raymond, F.....	Mar. 8
Keeler, T. L.....	Mar. 17
Murray, J. J.....	Mar. 22
Butler, J. E.....	Mar. 26
Fernstrom, T. O.....	April 17
Baxter, H.....	May 10
Mears, F.....	May 11
Boland, John.....	May 15
Bryant, J. H.....	May 21
Slayback, E.....	June 8
Johnson, H. E.....	June 15
Granberry, O. E.....	June 19
Omeallia, Ruth.....	June 19
Luce, R. H.....	June 20
Darling, Geo.....	June 20
Fennell, B. M.....	June 24
Grinder, J. B.....	June 30
Griley, G. L.....	July 13
Conley, R. S.....	July 14
Conley, W. H.....	July 14
Newman, C. J.....	Aug. 9
Hollowell, F.....	Aug. 13
Doyle, J. P.....	Aug. 18
Smith, F. C.....	Aug. 18
Falkner, G. E.....	Aug. 24
Bliefeld, Wm.....	Aug. 27

Name. Date.

Rivers, Frank.....	Aug. 29
Stewart, A. H.....	Aug. 29
Bissell, W. J.....	Sept. 4
Church, S.....	Sept. 4
Orr, E. F.....	Sept. 4
Metcalf, B. F.....	Sept. 8
Lingle, G. S.....	Sept. 13
Shaw, C. A.....	Sept. 8
Conner, Robt.....	Sept. 14
Nielsen, C. L.....	Sept. 28
Walker, R. B.....	Oct. 2
Murphy, Zan.....	Oct. 2
Andrews, R. F.....	Oct. 14
Vandenberg, H.....	Oct. 14
Reade, W. H.....	Oct. 16
Viall, H. H.....	Oct. 21
Carter, C. H.....	Oct. 26
Watkins, Wm.....	Nov. 2
Strobridge, F. L.....	Nov. 4
Warren, E. L.....	Nov. 7
Goodenow, A. B.....	Nov. 12
Scribner, D. W.....	Nov. 12
Hunter, Geo.....	Dec. 5
Lee, C. W.....	Dec. 10
Hartwig, A. H.....	Dec. 15
Zook, E.....	Dec. 17

P. R. R. Third Service Bar
List, 1904-1912.

Name.	1910.
Anderson, Henry.....	May 4
Bergin, R. W.....	May 4
Chester, W. C.....	May 4
Clark, T. H.....	May 4
Connolly, M. B.....	May 4
Gilbert, Wm.....	May 4
Hunt, J. StC.....	May 4
Jussen, A. S.....	May 4
Kallish, B. A.....	May 4
Northrop, C. W.....	May 4
Wardlaw, R. H.....	May 4
Warren, J. C.....	May 4
Wilson, G. F.....	May 4
Nunn, N.....	July 1
Davidson, S.....	July 5
Ruggles, G. H.....	Sept. 20
Griggs, A. C.....	Sept. 27
Angel, J. C.....	Nov. 1
Laughlin, R. E.....	Nov. 28
Bates, P. M.....	Dec. 6
Beakley, C. L.....	Dec. 6

Progress of the Tramways.

Five of the 15 cars for the Panama Tramways Company have arrived, but the motor equipment for only one of them has been received so far. As soon as six cars are ready for service, a part of the system, that of the Central avenue and Ancon lines, will be placed in operation. One of the cars is being operated for the purpose of instructing applicants for the position of motorman.

The cars are of the semiconvertible type, vestibuled at both ends, with automatic regulation of doors, and are painted green. They are 30 feet in length over all, with inside measurement of 20 feet six inches, and each car will seat 32 people. The seats are cane-

covered and reversible. The prepayment plan will be placed in effect, and fare boxes have been installed at each end of the cars.

It is planned to operate the Central avenue line, the Tivoli and Ancon spurs; and the Balboa line on a 10-minute schedule. The line from Santa Ana plaza to the Corozal road, via North avenue and the Caledonia road, will be operated on a 20-minute schedule, and, until the traffic situation in Las Sabanas can be more carefully studied, only three trips a day will be made as far as the police station. On Sundays and holidays, cars will be run at frequent intervals between the city and bathing beach.

The fare from one point to another within

city limits will be five cents, United States currency; from Panama to the present terminus of the line, near the East Balboa commissary, 10 cents; from Panama to the bathing beach, 10 cents; and to the police station in Las Sabanas, 15 cents. The service cannot be extended to Balboa until the crossings over the Central Division tracks, near the commissary, have been installed. Under the franchise, the cars will have to be operated from 5.30 a. m., until 12, midnight.

Mr. W. L. Black, who was formerly connected with the Porto Rico Railway, Light, and Power Company, at San Juan, Porto Rico, is the local manager of the tramways.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

MONTHS.	CULEBRA SECTION.*				CHAGRES SECTION.**			
	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.
Jan.	120,290	566,750	1,227,022	1,150,249	1,323,693	1,356,939	1,416,035	1,135,580
Feb.	166,410	639,112	1,248,265	1,194,454	1,259,173	1,409,338	1,349,590	996,900
March	239,178	815,271	1,790,885	1,434,597	1,509,728	1,728,748	1,539,618	1,133,900
April	213,177	879,527	1,742,574	1,272,746	1,298,945	1,414,336	1,455,216	1,178,000
May	196,209	690,365	1,560,840	1,126,963	1,099,279	1,299,100	1,405,760	921,000
June	212,623	624,586	1,134,032	1,242,134	1,305,141	1,401,016	1,345,780	1,048,900
July	159,789	770,570	1,211,325	1,200,828	1,153,810	1,337,833	1,335,590	1,048,900
August	244,823	786,866	1,171,927	1,177,714	1,377,714	1,402,402	1,094,132	1,048,900
Sept.	291,452	753,468	1,120,101	1,235,978	1,339,946	1,306,973	1,292,712	1,048,900
Oct.	327,809	834,499	1,160,101	1,302,901	1,370,792	1,306,973	1,113,420	1,048,900
Nov.	221,642	790,632	1,022,576	1,070,792	1,209,554	1,209,498	1,074,051	1,048,900
Dec.	307,689	1,025,485	1,210,046	1,152,022	1,221,400	1,351,082	1,074,051	1,048,900
Totals	2,707,901	9,177,140	13,912,453	14,557,034	15,398,599	16,596,891	15,028,413	5,415,280

PACIFIC DIVISION.†

MONTHS.	MIRAFLORES LOCKS, DAMS AND SPILLWAY.††				BALBOA TUNNELS.‡			
	1909.	1910.	1911.	1912.	1909.	1910.	1911.	1912.
Jan.	102,600	125,011	65,889	1,330	83,726	87,320	15,690	24,969
Feb.	95,031	123,738	50,511	1,228	58,242	9,486	6,009	18,700
Mar.	90,051	132,007	51,431	1,254	95,324	6,784	1,777	800
April	70,009	103,243	12,548	27,134	101,365	9,129	255	13,269
May	52,786	82,958	17,677	24,280	57,593	10,468	5,905	26,018
June	36,556	88,088	4,840	19,605	70,971	8,420	7,534	7,754
July	39,058	95,503	6,897	1,974	77,503	4,420	6,273	4,412
Aug.	40,346	99,737	22,558	3,489	58,025	12,769	2,250	4,866
Sept.	49,945	103,040	3,589	1,025	38,895	10,709	3,472	1,613
Oct.	57,321	118,327	112	1,700	7,433	5,363	1,257	1,613
Nov.	63,452	94,552	2,203	6,622	20,207	10,636	12,962	2,408
Dec.	96,590	72,030	16,677	1,677	28,342	11,158	17,520	3,176
Totals	793,835	1,238,234	235,952	97,410	739,355	128,412	82,399	110,039

*Total to June 1, 1913, 93,946,517 cubic yards. Excavated 1904, 243,472 cubic yards; 1905, 914,254.

†Dry excavation Mindi Hills 1907-1912, 2,196,198 cubic yards.

††Excavated various points in prism to June 1, 1913, 4,283,203 cu. yds.; Balboa Locks and Dams, 1907, 78,233 cu. yds.; Outside

prism 1908, 172 cu. yds.

‡Total to June 1, 1913, 6,631,996 cubic yards; including 26,628 cu. yds. in 1906; 1,340,179 cu. yds. in 1907; 2,774,561 cu. yds. in 1908.

§Total to June 1, 1913, 1,320,127 cubic yards; including 256,780 cu. yds. in 1908.

||Total to June 1, 1913, 2,837,298 cubic yards; including 846,920 in 1908.

¶Total to June 1, 1913, 578,486 cu. yds.; including 318,731 cubic yards in 1912.

‡‡Total to June 1, 1913, 3,739,131 cu. yds., including 3,820,175 cu. yds. in 1905-07.

§§Total to June 1, 1913, 1,746,570 cu. yds. *

CONCRETE IN LOCKS AND DAMS. *

MONTHS.	GATUN LOCKS.†				PEDRO MIGUEL LOCKS.††			
	1911.	1912.	1913.	1911.	1912.	1913.	1911.	1912.
Jan.	72,910	34,983	28,085	38,513	15,003	1,652	24,018	46,416
Feb.	72,103	26,164	40,780	37,011	12,639	4,294	20,499	69,479
March	86,484	27,532	48,180	44,716	9,431	13,412	31,177	83,706
April	67,461	11,690	12,732	28,685	9,466	2,145	39,785	13,030
May	67,461	7,746	13,928	19,135	10,736	1,141	36,154	92,095
June	55,305	6,095	18,243	10,061	1,141	26,546	68,498	6,956
July	71,046	8,093	19,006	11,480	1,141	26,546	68,498	6,956
Aug.	66,928	3,162	20,736	6,413	1,141	26,546	68,498	6,956
Sept.	57,998	3,162	15,379	3,039	1,141	26,546	68,498	6,956
Oct.	53,636	3,252	25,637	6,587	1,141	26,546	68,498	6,956
Nov.	43,590	5,697	19,622	7,972	1,141	26,546	68,498	6,956
Dec.	43,590	5,697	14,360	6,958	1,141	26,546	68,498	6,956
Totals	758,821	147,708	143,705	301,893	109,679	25,647	474,437	783,189

*Concrete in dams to June 1, 1913 - Gatun spillway, 224,167 cu. yds.

†Miraflores dam and spillway, 46,907 cu. yds.; Pedro Miguel dam, 1,289 cu. yds.

††002,523 cu. yds. in 1909 and 1910, 147,803 cu. yds. in 1909 and 1910, 197,603

cu. yds. in 1909 and 1910.

FILL PLACED IN DAMS—1906-1913.

YEAR.	GATUN.		PEDRO MIGUEL.	
	Wet	Dry	Wet	Dry
To January 1, 1911.	Cu. Yds. 5,833,076	Cu. Yds. 260,852	Cu. Yds. 609,863	Cu. Yds. 29,712
1911.	5,833,076	260,852	609,863	29,712
1912.	1,402,501	249,092	356,336	460,514
1913.	534,841	22,298	159,780	159,780
Totals.	10,728,965	11,775,076	602,978	1,648,159

CANAL EXCAVATION TO DATE.

By French Companies..... 78,146,960

By French excavation useful to present Canal..... 29,908,000

By Americans—

Dry excavation..... 124,068,646

Dredges..... 76,668,486

Total..... 200,737,132

May 4 to December 31, 1904..... 243,472

January 1 to December 31, 1905..... 1,799,227

January 1 to December 31, 1906..... 4,948,497

January 1 to December 31, 1907..... 15,765,280

January 1 to December 31, 1908..... 37,116,735

January 1 to December 31, 1909..... 35,096,166

January 1 to December 31, 1910..... 31,437,699

January 1 to December 31, 1911..... 30,289,349

January 1 to December 31, 1912..... 12,456,820

January 1 to June 1, 1913.....

TOTALS BY DIVISIONS AND AMOUNT TO BE EXCAVATED.

DIVISIONS.	Amount excavated.		Remaining to be excavated.	
	Amount excavated.	Remaining to be excavated.	Amount excavated.	Remaining to be excavated.
Atlantic—				
Dry excavation.....	8,828,194	45,170,586	85,023	2,751,191
Dredges.....	36,342,392		2,665,268	
Central—				
Culebra Cut.....	93,946,517	106,331,172	5,420,300	5,720,300
All other points.....	12,864,655		300,000	
Pacific—				
Dry excavation.....	9,097,519	49,235,374	1,213,220	8,929,676
Dredges.....	40,137,555		7,716,456	
Grand total	200,737,132		17,401,167	

PERMANENT BUILDINGS.

Architects for the Commission Preparing Plans in Uniform Style.

The designing of the permanent buildings to be used in the operation and maintenance of the Canal is based upon requirements outlined by heads of departments of the present constructive and administrative force, who used as indices their experience and tentative knowledge of the future organization. Within these outlines, the architectural plans are being worked out by Mr. Austin W. Lord of the firm of Lord, Hewlett, and Tallent, New York, and his assistant on the Isthmus, Mr. Mario J. Schiavoni.

The new administration building, the permanent quarters for the white members of the operating force, the office building for the Balboa terminals, and the projection of town sites are the most conspicuous portions of this work. In addition, the architects have designed the general architectural treatment and preparation of the plans, elevations, and details of the hydroelectric station at Gatun, and of the three control houses for the three sets of locks. Mr. Schiavoni has also evolved a new style of concrete bracket for the lamp reflectors of all locks, and has designed the architectural treatments for the new filtration plant at Miraflores, and the two pumping stations, one at Ancon, and the other at Miraflores, besides the general plan for the West Indian camp at Balboa. Altogether, the drafting work assigned to the architect's office covers 14 different projects.

The plans and details for the hydroelectric station, the three control houses, the lamp bracket, and the architectural treatments for the Mount Hope filtration plant have been completed, and the erection work is now in the hands of Isthmian Canal Commission forces. Preliminary plans and elevations have been approved for the administration building, the shops' office buildings at Balboa, and the Toro Point lighthouse, which are all being worked out by the assistant architect at Culebra, with his six draftsmen. Plans for the official quarters and the permanent quarters for white employees, and for the town buildings at Balboa, including a postoffice, police station, fire station, dispensary, telephone building, clubhouse, hotel, social hall, church, commissary store, and schoolhouse, are being prepared in Mr. Lord's office in New York, four draftsmen being engaged there on this work. The landscape architect, Mr. William L. Phillips, who is due to arrive on the Isthmus in July, will work in conjunction with the permanent building architects. He will have special charge of the details of townsites, streets, parks, etc.

The style of the buildings of Italian design, has been determined principally by utility and conformation with tropical weather and topography, using arcades or exterior colonnades, and arched windows where feasible. They will be built substantially of reinforced concrete and hollow concrete blocks, stuccoed on the outside, and will be covered by dark red tile roofs.

Removal of Sand Crane at Balboa.

One of the three steel cantilever cranes used for unloading sand barges at Balboa has been dismantled and stored in the yards of the Depot Quartermaster at Mount Hope. This crane stood at the southern end of the sand wharf and occupied a part of the site

of one of the permanent terminal buildings. Its removal is made practicable at this time by the reduced consumption of sand as the lock construction draws to a close. About 80 lineal feet of storage bin have been removed in connection with the dismantling of the crane, and the approach tracks are to be shifted outward, to clear the site for the new building.

PERSONAL.

Don José Buigas de Dalmau, who has been the Chargé d'Affaires and Consul of Spain at Panama for the past two years, has been transferred to Larache, Morocco, and sailed for there, accompanied by his family, on the Spanish line steamer *Montserrat*, on Thursday, June 12. He was formerly consul at Mobile, Ala., and, prior to the time Spain obtained suzerainty over a part of Morocco, he represented his government in that country in the capacity of adviser to the Sultan. Don José Teixidor y Jugo has been named as his successor in Panama, with the title of Consul of the first-class.

Obituary.

Hartwell Bishop, the eldest son of Joseph Bucklin Bishop, Secretary of the Isthmian Canal Commission, died in Boston, Mass., on Wednesday night, June 4. Mr. Bishop was thirty-three years of age, married, and was a graduate of Harvard University, class of 1903. For some time past he had lived in San Francisco, where he was employed as a civil engineer by the United Railways Company. He is survived by his wife, who was with him on his visit east.

Customs Examination of Household Goods of Employes Prior to Shipment.

Advice has been received that the Treasury Department has approved a plan whereby the Canal Zone Customs Service will examine the boxes, cases, etc., containing household goods of all American employes of the Isthmian Canal Commission and the Panama railroad and army officers on duty as such in the Canal Zone, where the boxes, cases, etc., are shipped other than as personal baggage. Invoices covering the shipment will be declared to by the shipper before a customs officer in the Zone, and will be submitted to the collector of customs at the port of arrival, together with a certificate of the Canal Zone collector of customs, or his deputy, as to personal examination.

Under this arrangement, shipments of returned American goods, and household goods purchased abroad and actually used as such by the shipper, or his family, for at least one year, will pass the customs without further examination on arrival at a port in the United States. Where goods are to be shipped in accordance with the approved plan, they will be packed under the personal supervision of a representative of the customs division, and the boxes, cases, etc., will then be sealed and a certificate of inspection, signed by the deputy collector of customs, attached to each piece.

This examination and certificate of inspection will not apply to goods taken as baggage whether packed in trunks, boxes, or other receptacles. Persons, who are returning to the United States taking with them a shipment other than as baggage, must notify the Collector of Customs at Ancon, or the Deputy Collector of Customs at Cris-

tobal in ample time, giving the date of sailing, if known, so that arrangements can be made to send a representative to make the inspection. Goods must be ready to be packed at the time agreed upon, and will have to be packed under the supervision of the inspector, otherwise the examination will not be made on the Isthmus. It is not proposed that more than one visit will be made by an inspector for the purpose of making an examination.

Fourth of July Bathing Facilities.

The subcommittee on water sports for the Fourth of July celebration has made arrangements for dressing rooms for men and women at dock No. 16, in order that those desiring to bathe in the slip between the piers may avail themselves of the opportunity to do so. The Police Department will notify the bathers in time for them to leave the water before the commencement of the aquatic contests. A police launch, with crew, will be on hand to protect the bathers while they are in the water.

Trouble Among Laborers on a Labor Train.

At Miraflores, on Monday, June 9, a number of colored laborers attempted to board a car reserved to white silver employees, but were prevented by the men inside. Some of the colored laborers then began throwing rocks, one of which struck José Nolasco, a Peruvian, check No. 175405, injuring him fatally. A number of arrests were made, and in the Circuit Court of the First Judicial Circuit at Ancon, on Monday, June 16, five of the participants were convicted and given penitentiary sentences of five months each. The identity of the person who threw the stone that killed Nolasco was not established.

Civil Service Examinations.

Examination will be held, probably on July 27, for the positions of stenographer and typewriter, Isthmian Canal Service; stenographer and typewriter, Philippine Service; and typewriter, Isthmian Canal Service. Applications will not be received after July 2; this date may be changed if necessary. Persons interested should request a copy of Form 1424, which contains information in regard to the abovenamed examinations.

Competitors in the abovenamed examinations must bring their own typewriting machines to the examination room.

The examinations will be held probably in the Commission clubhouse at Empire, but the place and date should be omitted in applications.

A card of admission will be sent to those found eligible to be admitted, just before the examination.

In answer to questions as to residence, applicants must show residence in a State or Territory of the United States, and county thereof, up to the time of filing application.

ISTHMIAN CIVIL SERVICE BOARD.

Culebra, C. Z., June 14, 1913.

Independent Order of Panamanian Kangaroos.

The Independent Order of Panamanian Kangaroos will hold its annual memorial services in the I. C. C. chapel at Empire, on Sunday, June 22, at 3 p. m. All members and friends are invited to attend.

H. H. HUDSON, *Comptroller*.

Empire, C. Z., June 14, 1913.

Mr. G. M. Guerin has received his appointment as vice-consul for the kingdom of Norway in the city of Panama and village of Ancon.

SOCIAL LIFE OF THE ZONE.

Church Notes.

The unveiling and dedication of a new pipe organ in Christ Church on Colon Beach, took place at the morning service on Sunday, June 15. Mr. Tracy Robinson, who was present at the consecration of the structure in 1865, was chosen to unveil the new instrument, the dedication by the rector following.

The installation of the organ, which cost \$4,000, completes the work of improvement which has been going on in the church since the beginning of the present year. In addition, the building has been entirely renovated, and a permanent altar of concrete, the gift of the altar society, presented at Easter, has been placed in the chancel. The altar was consecrated by the Bishop of Cuba on March 30.

For nearly 50 years, Christ Church has been an architectural feature of Colon Beach. It was built by the Panama Railroad Company in 1864 for the use of its employees engaged in the construction of the road, a large number of whom were West Indians, who were allied with the established church of England. For a time, it was under the jurisdiction of the Episcopal church of America, but was subsequently transferred to the Anglican church in whose charge it remained until 1907, when, owing to the exercise of sovereignty over the Canal Zone, by the United States, it reverted to the American church. It has always been the official church of the Panama railroad, and the cost of its maintenance was borne by the company up to 1911, when, under the authority of the Secretary of War, the property was transferred to the church mission in America, and the church became self-supporting.

The parish is governed by an advisory board, of which the rector and two wardens are members. While the majority of the members are West Indians, by whose contributions the church is mainly supported, a number of American and English families attend its services and contribute liberally. The average congregation is about 400, but the ministry of the church is wide, and embraces a much larger number of souls than indicated by the above figure. In addition, there is a Sunday school, with an enrollment of 175 pupils, and a parochial school.

The societies in connection with the church are an altar society, composed of American and English women, an altar service guild, composed of young men and boys, a chapter of the Brotherhood of St. Andrew, a junior chapter, and a choir guild. In February, 1911, social service extension work was begun by the establishment of a dime savings bank. This venture has met with unlooked-for success, and, although the number of depositors varies, owing to the transient nature of the population upon which the church draws for its members, and, although the amount deposited fluctuates, a maximum of 100 depositors, has been reached, and as much as \$5,000, Panamanian currency, has been in the bank at one time. A boy scout movement, which was started a few years ago, but in which interest subsequently waned, has been revived.

Christ Church has two missions for the West Indians, one at Mount Hope, and one at New Gatun.

The Cristobal Union Sunday school observed Children's Day on Sunday, June 8.

There was an appropriate service in which the pupils of the school participated.

On Sunday, June 15, Children's Day was celebrated by the Empire Sunday school. The program used was entitled, "The light bearers." It consisted of songs and hymns by the school, special musical numbers by the classes, readings, and recitations. The record attendance of the Sunday school for the year was reached on Sunday, June 8, when there were 116 present.

On Sunday, June 29, Children's Day will be celebrated in the Methodist Sunday school in Panama.

In the absence of the chaplain, Mr. George A. Barte delivered an address at the Gatun

Christian League service at the Commission chapel at Gatun, on Sunday evening, June 15.

Balboa Sand Service.

A report of sand shipped from Balboa during the month of May, follows:

DESTINATION.	Number cars.	Cubic yards
Fifth Division.....	668	12,348
Atlantic Division.....	28	692
First Division.....	6	90
Fortifications Division.....	*444	9,892
Central Division.....	46	690
Panama Railroad Company.....	9	225
Civil Administration.....	2	50
Quartermaster's Department.....	4	100
Panama Government.....	2	50
R. W. Hebard and Company.....	1	25
Total.....	1,210	24,162

*Also two barge loads.

OFFICIAL CIRCULARS.

Observance of Independence Day.

CULEBRA, C. Z., June 14, 1913.

CIRCULAR No. 489:

Independence Day, Friday, July 4, 1913, will be observed as a holiday in the Canal Zone, and as far as practicable all public business will be suspended on that day.

H. F. HODGES.

Acting Chairman and Chief Engineer.

Accountability, Department of Civil Administration.

CULEBRA, C. Z., June 16, 1913.

CIRCULAR No. 490:

On account of the resignation of Commissioner M. H. Thatcher, the property accountability of the Department of Civil Administration will be transferred to Mr. George A. Ninas, chief clerk of that department, who is hereby designated an accountable officer of the Commission and, as such, will make return of property of the Department of Civil Administration for the quarter ending June 30, 1913.

H. F. HODGES.

Acting Chairman.

RATES FOR ROOM AND MEALS—NONEMPLOYEES.

Grade of room.	Number persons in room.	Transient Daily.	WEEKLY.		MONTHLY.			
			Per day.	Per week.	First month.		Second Month	
					Daily.	Monthly.	Daily.	Monthly.
1	1	\$5.50	\$5.00	\$35.00	\$4.00	\$120.00	\$3.50	\$105.00
1	2	10.00	9.00	53.00	7.00	210.00	6.00	180.00
2	1	5.00	4.50	31.50	3.50	105.00	3.00	90.00
2	2	9.00	8.00	56.00	6.00	180.00	5.00	150.00
3	1	4.50	4.00	28.00	3.25	97.50	2.50	75.00
3	2	8.00	7.00	49.00	5.50	165.00	4.50	135.00

Shop Expense Percentage for P. R. R. Shops Revoked.

CULEBRA, C. Z., June 13, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

The shop expense percentage fixed in circular letter dated March 29, 1913, for the Panama railroad shop is hereby revoked, effective June 1, on account of the transfer of the car department of the Panama railroad to the Mechanical Division of the Commission.

H. F. HODGES.

Acting Chairman, Isthmian Canal Commission,
Second Vice-President, Panama Railroad Company.

Office of Master of Transportation, P. R. R.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., June 14, 1913.

CIRCULAR No. 111:

TO ALL CONCERNED:

Effective Monday, June 16, 1913, the duties of master of transportation will be taken over and handled by the undersigned for the present.

The office force will be maintained as it is, and report to and receive instructions from this office, until further advised.

All transportation department reports, etc., will be continued to be made to that office, as heretofore, and handled under the supervision of this office.

The acting chief dispatcher will conduct all investigations of accidents, until further advised.

J. D. PATTERSON,
General Superintendent.

Acting Receiving and Forwarding Agent.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., June 12, 1913.

CIRCULAR No. 109:

TO ALL CONCERNED:

Effective this day, Mr. J. C. Angel is appointed acting receiving and forwarding agent, Colon agency, during the absence of Mr. R. W. Bergin, on leave.

JOHN D. PATTERSON,
General Superintendent.

Rates and Rules for Hotel Tivoli.

CRISTOBAL, C. Z., May 31, 1913.

CIRCULAR No. 96-B:

Circular No. 96-A., effective November 9, 1910, prescribing rates and rules for the Hotel Tivoli, is hereby revoked.

The following rates and rules for the Hotel Tivoli are published, effective June 1, 1913:

EMPLOYEES.

Daily—Same as daily rates for first month non employees.

Monthly—Same as monthly rates for nonemployees.

Special rates will be made for room and meals for women employees for whom no quarters are provided at Ancon.

RATES FOR ROOM WITHOUT MEALS—NONEMPLOYEES AND EMPLOYEES.

Guests at "room and meals" rate may be rented second-grade rooms for use as parlors at the following rates:

Transient, daily, \$3.

Weekly, per day, \$2.75; per week, \$19.25.

Monthly, per day, \$2.50; per month, \$75.

EMPLOYEES ONLY.

Grade of room.	Number persons in room.	Daily, or for night's lodging only.
1	1	\$2.00
1	2	3.00
2	1	1.50
2	2	2.00
3	1	1.25
3	2	1.75

Rooms without meals will not be rented to employees for a longer period than two days, at which time bills

will be rendered and collected. No other rates for rooms without meals will be made.

RATES FOR MEALS.

	TRANSIENT		TABLE BOARD.	
	Nonem- ploys.	Em- ploys	Nonem- ploys.	Employees.
Breakfast.	\$0.75	\$0.75	\$14.00	\$12.00 per week.
Lunch....	1.00	.75	48.00	45.00 per month
Dinner....	1.00	.75		

NOTE—(At table board no credit will be given for meals not taken.)

Meal tickets will be purchased at the office before entering dining room by employees at "room without meals" rate, and by all persons without rooms.

RATES FOR MEALS A LA CARTE.

Minimum charge per meal, \$1.

This service will supplement the regular service for lunch and dinner.

Guests at "room and meals" rate, as well as all purchasers of regular meal tickets, may order a la carte, not to exceed \$1 without additional charge, but when exceeding \$1, will be required to pay amount of such excess in cash or to sign check for same before leaving dining room.

Children at the \$1 or the \$1.25 per day rate will pay 25 cents extra for each a la carte meal taken, and, in addition, when bill for such a la carte meal exceeds \$1 will pay the amount of such excess.

TEA ROOM SERVICE.

Hours—3 to 6 p. m. Minimum charge, 25 cents.

An extra charge of 25 cents per day per person will be made for grade-2 rooms en suite with grade-1 rooms with bath.

FAMILIES OR PARTIES AT "ROOM AND MEALS" RATE OCCUPYING A GRADE-2 ROOM EN SUITE WITH A

GRADE-1 ROOM.

NO. OF PERSONS.*	CHARGE.
Two.....	One in grade 1 One in grade 2 En suite charge for one, 25 cents.
Three.....	One in grade 1 Two in grade 2 En suite charge for two, 50 cents.
Four.....	Two in grade 1 Two in grade 2 En suite charge for two, 50 cents.

*Not including children under 12.

If in any of the three above-mentioned groups one of the persons is a nurse or servant, the nurse or servant will be considered located in the grade-1 room and be charged two-thirds the regular rate for same. An extra charge of 25 cents will be made for breakfast served in room, and an extra charge of 50 cents for lunch or dinner.

Two in a room is ordinarily the full capacity of grade-1 and grade-2 rooms, but if it be necessary for more than two persons to occupy a room temporarily, the charge for each additional person will be \$4.50 for grade-1 rooms, \$3.75 for grade-2 rooms, and \$3 for grade-3 rooms. Grade-3 rooms will ordinarily not be rented to more than one person by day or week.

The rate for servants when occupying room will be two-thirds the regular rate, when occupying cot in room or bathroom or in regular servant's quarters, one-half the usual rate for grade-3 room.

The rate for children under 12, when occupying room with parents or nurse and requiring no extra bed, but old enough to occupy seat at table, will be a flat rate of \$1.25 per day for daily rate and \$1 per day for weekly or monthly. Over 12 years of age, full rates will be charged. An extra charge of 50 cents per day per cot or bed will be made for children where a cot or extra bed is required in room with parents or nurse.

Children under 12 will not be put alone in a grade-1 room unless parent or nurse or another child of family

over 12 occupies grade-2 room en suite. Whenever there are more than one person over 12 in a suite, the "families or parties" rate for suites applies.

In case a room is occupied by one or more children under 12, without nurse or other person over 12 in room, a room charge per room will be made as follows:

NONEMPLOYEES.

Grade of room.	Transient Daily.	WEEKLY.	
		Per day.	Per week.
1	\$2.25	\$2.00	\$14.00
2	2.00	1.75	12.25
3	1.75	1.60	11.20.

NONEMPLOYEES.

Grade of room.	MONTHLY.			
	First Month.	Second Month.	Per day.	Per month.
	Per day.	Per month.	Per day.	Per month.
1	\$1.50	\$45.00	\$1.25	\$37.50
2	1.25	37.50	1.00	30.00
3	1.15	34.50	.75	22.50

EMPLOYEES.

Daily—Same as daily rates for first-month nonemployees.

Monthly—Same as monthly rates for nonemployees.

The "per room" charge for rooms occupied by children under 12, is in addition to regular charge for children and in addition to any charge made for extra bed or cot or any en suite charges.

Employees will be required to pay bills at time of leaving in coupons. If properly identified as employees to the satisfaction of the manager, bills may be paid in currency. Persons at "room and meals" rate must pay for all meals, unless one day's meals or more are missed consecutively, in which case notice must be given to the clerk in advance in order to secure credit. Credit for meals will be allowed to nonemployees at the rate of \$2.50 per day on daily rates and at the rate of \$2.25 per day on weekly rates, and to employees at the rate of \$2 per day on daily rates.

If rooms be occupied by the month and guests are absent, credit will not be given for the room. If absence is for one full week, credit will be allowed for meals from the full monthly rate at the rate of \$1.50 per day for first month nonemployees and \$1.25 per day for second-month guests. Notice must be given to the clerk in writing or in person, in advance, to secure credit.

When one day's meals or more, are missed consecutively and required notice given in advance, children under 12 will be given credit for meals at rate of 75 cents per day and servants at rate of \$1 per day.

Open accounts will not be permitted. Guests will be required to pay their bills upon leaving. Accounts of transient employees unpaid at time of leaving will be made up at the proper nonemployees rate and sent to the Examiner of Accounts. Weekly bills will be rendered when due. Monthly bills will be made up on the 7th, 14th, 21st, and last day of the month. All bills are due and payable upon presentation. No variations from this rule will be made without authority from the Subsistence Officer.

The weekly rate does not apply unless stay has been for a full week and the monthly rate does not apply unless stay has been for a full month. And, since bills are made up once a week, the weekly bills of nonemployees who have expressed their intention of staying at the Tivoli by the month will be made out during the first month at weekly rates and proper correction will be made at the end of the first month's stay.

No employee of the hotel has authority to make any other rates or to modify any of the foregoing rules.

EUGENE T. WILSON.

Subsistence Officer.

Married.

EVERSON-GOODACRE—In the Union Church, Cristobal, on Sunday afternoon, June 15, Miss Doris

Mary Goodacre of Wakefield, Mass., to Lieut. John Horace Everson, U. S. N., of Syracuse, N. Y., Rev. Carl H. Elliott officiating.

Cold Storage Prices.

The prices of cold storage articles at the commissaries, as published in *The Canal Record* of June 11, remain unchanged.

Family Quarters.

Applications for married quarters on file on May 31 were, as follows:

DISTRICT.	List No. 1.	List No. 2.
Ancon.....	12 (5)	100 (20)
Ancon Hospital.....		4
Balboa.....	1 (1)	53 (2)
Bas Obispo.....		21 (3)
Corozal.....	1 (1)	130 (16)
Cristobal.....		144 (2)
Culebra.....	1	31 (8)
Empire.....	2 (1)	91 (25)
Gatun.....		74
Las Cascadas.....		35 (6)
Pedro Miguel.....	3	58
Porto Bello.....	1	14 (5)
Toro Point.....	1 (1)	7 (1)
Total.....	22 (9)	762 (88)

NOTE—The figures in parentheses show the number of applicants already occupying regular or nonhouse-keeping family quarters at stations other than those at which applications are filed

Rainfall from June 1 to June 14, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	1.26	4	2.99
Balboa.....	.88	6	2.04
*Miraflores.....	1.30	4	3.44
Pedro Miguel.....	1.42	14	6.02
Rio Grande.....	1.52	11	4.98
<i>Central Section—</i>			
Culebra.....	2.57	11	5.89
*Camacho.....	1.85	11	6.49
Empire.....	3.36	7	7.98
Gamboa.....	1.31	13	4.21
*Juan Mina.....	3.19	5	6.84
Alhajuela.....	2.71	11	6.97
*El Vigia.....	1.96	3	6.49
*Gorgona.....	1.20	13	5.87
*Frijoles.....	2.70	11	7.15
*Monte Lirio.....	2.38	11	7.56
<i>Atlantic Section—</i>			
Gatun.....	1.70	1	9.44
*Brazos Brook.....	2.03	11	8.18
Colon.....	2.05	11	8.51
Porto Bello.....	1.56	3	4.66

*Standard rain gage—readings at 5 p. m. daily—automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., June 13.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, June 14, 1913. All heights are in feet above mean sealevel.

DAY AND DATE	STATIONS			
	Vigia	Alhajuela	Gamboa	Gatun Lake.
Sun., June 8.....	126.2	92.8	48.7	48.7
Mon., June 9.....	126.2	92.6	48.6	48.6
Tues., June 10.....	126.0	92.4	48.6	48.6
Wed., June 11.....	130.1	95.4	50.4	48.5
Thurs., June 12.....	129.6	94.8	50.2	48.6
Fri., June 13.....	129.3	95.0	49.6	48.9
Sat., June 14.....	127.0	93.4	49.6	49.2
Height of low water to nearest foot.....	125.0	91.0	44.0	

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending June 28, 1913, (75th meridian time):

DATE.	Low	High	Low	High
	A.M.	A.M.	P.M.	P.M.
June 22.....		6.10	12.21	6.20
June 23.....	12.40	6.51	1.04	7.02
June 24.....	1.22	7.30	1.48	7.43
June 25.....	2.03	8.10	2.34	8.27
June 26.....	2.47	8.52	3.22	9.11
June 27.....	3.32	9.37	4.12	10.02
June 28.....	4.21	10.25	5.05	10.57

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The moving picture schedule for the week June 23 to 28 is, as follows: Monday, Empire; Tuesday, Gatun; Wednesday, Corozal; Thursday, Culebra; Friday, Cristobal and Porto Bello; Saturday, Gorgona.

On May 31, the total membership in the Canal Zone clubhouses was 1,965, of which 110 were boys.

During May, 8,923 games were rolled on the alleys and 24,506 games of pool and billiards were played; 16 tournaments were in progress; 1,093 members of the libraries withdrew 3,072 books; 4,140 people attended 18 entertainments given by companies from the United States, and 8,316 people attended 36 local entertainments; 148 people were called on in the hospitals, and 504 cots were occupied in the dormitories.

Although the membership at the Gorgona clubhouse is naturally diminishing on account of the fact that the building is soon to be demolished, the transfers and new members in other associations have more than made up for this loss during the first eleven months of the fiscal year, 1912-13, the average membership for this period being 2,029, as compared with 1,930 for the same period during the fiscal year 1911-12.

CULEBRA.

Twenty-one men have entered in the "Drop out" bigpin tournament which will start this week. The prize for the first place will be a gold medal.

A special entertainment, with moving pictures, was given by Mr. E. H. Hagy of New York on Friday night, June 13.

EMPIRE.

The regular moving picture show will be held on Friday, June 20, the one held Monday, June 16, being a special show of selected reels belonging to Mr. Hagy. Nineteen men have entered the handicap pool tournament. Each man is to play every other man, the winner of the tournament being the one who has the most games to his credit. Gold and silver medals will be awarded as prizes.

As a number of men have requested that a gymnasium class be started, arrangements have been made whereby the first class will meet on Thursday evening, June 19. The class will meet every week according to announcement, and will be open to all.

Twenty-four men have entered the elimination bowling tournament.

The Empire "American League" duckpin tournament team bowled the Corozal team on the Culebra alleys on Wednesday, June 11, winning two out of three games. The Empire and Cristobal teams are tied for first place. They will roll off three games on the Gatun alleys to decide the winner.

GORGONA.

On Tuesday evening, June 10, Mr. Friedman furnished special piano music for the moving picture entertainment. A special moving picture exhibition was given by Mr. Hagy on Thursday night.

The Camp Elliott indoor baseball team played the local team on Wednesday night, June 11, which resulted in a score of 16 to 4 in favor of Gorgona. The following men composed the teams:

Gorgona—Ridge, Loudon, Sims, Ridge, S. Carpenter, Johnson, Christensen.

Camp Elliott—Harper, Dejuie, O'Brien, Johnson, Coleman, McDonald, Anderson.

Empire played the Gorgona team on Saturday night, June 14, and lost by a score of 27 to 3. The following was the lineup:

Gorgona—Ridge, Loudon, Sims, Ridge, S., Herring, Christensen, Hilty, King.

Empire—Rose, Gardener, Sawyer, Shafer, Watson, Alley, Crites Hall.

GATUN.

A good-sized audience was present to see the game of indoor baseball played between Camp Elliott and Gatun on the latter's floor on Saturday evening, June 14. Gatun won by a score of 20 to 11. The lineups were, as follows:

Gatun—Walton, Cauthers, Wright, Stevens, Mitchell, L., Carter, Duer.

Camp Elliott—Walbridge, Johnson, Harper, O'Brien, McDonald, Anderson, Donahue.

Linesman, Galloway; scorer, Loulan; umpire, Charnley. After the game, a social hour was spent, during which refreshments were served.

The regular weekly motion picture exhibition will be held on Saturday evening, June 21.

A lecture on "The volume of form" will be given by Chas. W. McDonald on Thursday evening, June 19, at 8 o'clock.

Oliver Goldsmith's play, "She stoops to conquer" was given at Gatun on Friday evening, June 13, by

a number of the students of the Canal Zone high school, under direction of Prof. C. C. Carr. Three hundred people were present.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission and Panama Railroad Company, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending June 14:

Colon, June 8, from New York, with 33 pieces lumber, 30 pieces galvanized iron, 40 kegs bolts, 24 cases brass valves, 100 cases lanterns, 11 cases boiler covering, 50 cases sal soda, 20 drums lubricating oil, 36 cases paint, 270 pieces steel plates, 20 cases lantern globes, 26 cases paper, 50 bundles paper, 22 cases horseshoe nails, 34 reels sash cord, 60 crates buckets, 11 barrels water bottles, 68 cases caustic soda, 100 cases welding compound, 116 bales cotton waste, 167 cases candles, 89 barrels brick, for stock; 150 cases electrical material, 28 reels copper cable, 32 cases panel boards, 42 casks tile, 300 pieces structural steel, for First Division; 25 cases brake shoes, 16 casks crucibles, 200 bundles car springs, 129 packages car knuckles, for Mechanical Division; 100 pieces steel plates, for Second Division; 807 pieces steel bars, for Atlantic Division; 590 pieces structural steel, for Administration building; and a miscellaneous cargo, the whole consisting of 4,690 packages, weighing 840 tons.

Sixtoia, June 8, from New York, with 164 pieces structural steel, for Panama Railroad Company; 160 pieces steel plates, for fortifications; 240 pieces steel bars, for Second Division; 12 cases castings, for First Division; 10 packages steel bars, for stock.

Emil S. Boas, June 8, from New York, with 8 cases electrical material, for emergency dams; 50 packages buoys, for lighthouse subdivision; 217 kegs bolts and rivets, for stock.

Cartago, June 9, from New Orleans, with 1,115 pieces yellow pine lumber, for Mechanical Division; 350 tons pig iron, for emergency dams; 286 pieces cross-ties, 124 pieces piling, 458 bales straw, 180 crates handles, 9,327 pieces yellow pine lumber, for stock.

Cristobal, June 10, from New York, with 80,696 bags cement, 10 cases lead washers, 63 drums paint, for stock; 150 pieces steel knuckles, 205 pieces steel couplers, 15 kegs wire nails, 66 cases incandescent lamps, for Mechanical Division; 111 pieces iron pipe, for Fifth Division; 50 pieces steel plates, 447 rolls roofing felt, 120 barrels pitch, 89 bundles steel bars, for Second Division; 44 cases electrical material, 17 cases steel treads, for First Division.

Almirante, June 11, from New York, with 1,180 kegs wire nails, 25 pieces steel beams, for stock; 120 pieces iron pipe, for Fifth Division; 253 pieces structural steel, 14 cases structural steel, 12 bundles structural steel, for Panama Railroad Company.

Abangarez, June 12, from New Orleans, with 197 pieces lumber for stock; 100 pieces castings, 1,822 pieces lumber, for Mechanical Division; 312 barrels brick, two crates inspection cars, for Panama Railroad Company; 15 pieces piling for stock.

Atala, June 13, from San Francisco, with 2,432 pieces redwood lumber, 62 cases salt water soap, 7 cases flax packing, for stock.

Misdirected Letters.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Allen, J. E.	Keitchen, F. L.
Barnets, W. M.	Le Blanc, Dan D.
Beattie, Mrs. Thomas	Matter, O. E.
Beckford, Richard	Morgan, Sterling
Clisbee, F. A.	Pain, John A.
Cook, Otis C.	Parker, Leon B.
David, T. G.	Rumble, Manley
De Gouveia, John S.	Schwartz, Mrs. Osepha
Farrell, Patrick	Schutt, Geo.
Gorman, John C.	Small, Jos.
Greening, Walter	Whitehead, Mrs. A.
Hull, G. E.	Willis, L. B.

Proposals for Furnishing 1,200 Coconut Seeds.

OFFICE OF THE DEPOT QUARTERMASTER.

MOUNT HOPE, C. Z., June 16, 1913.

Sealed proposals will be received at the office of the Depot Quartermaster, Mount Hope, until 3 p. m., June 30, 1913, when they will be opened in the presence of attending bidders, for furnishing in cars at any station of the Panama Railroad Company, 1,200 coconut seeds for planting. Best quality only is desired and samples must be submitted. Proposals should show unit price. Coconuts are to be supplied at the earliest practicable date. The right is reserved to reject any or all bids. Envelopes must be plainly marked: "Proposals to furnish coconut seeds, to be opened at 3 p. m., June 30, 1913."

C. NIXON,

Depot Quartermaster.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Panama.....	P. R. R. Friday.....	June 13
Allianca.....	P. R. R. Thursday.....	June 19
Colon.....	P. R. R. Thursday.....	June 26
Advance.....	P. R. R. Wednesday.....	July 2
Panama.....	P. R. R. Tuesday.....	July 8
Allianca.....	P. R. R. Monday.....	July 14
Colon.....	P. R. R. Saturday.....	July 19
Advance.....	P. R. R. Saturday.....	July 26
Panama.....	P. R. R. Friday.....	Aug. 1
Allianca.....	P. R. R. Thursday.....	Aug. 7
Colon.....	P. R. R. Thursday.....	Aug. 12
Advance.....	P. R. R. Tuesday.....	Aug. 19
Panama.....	P. R. R. Monday.....	Aug. 25
Allianca.....	P. R. R. Saturday.....	Aug. 30

CRISTOBAL TO NEW YORK.

Advance.....	P. R. R. Thursday.....	June 19
Panama.....	P. R. R. Wednesday.....	June 25
Allianca.....	P. R. R. Tuesday.....	July 1
Colon.....	P. R. R. Tuesday.....	July 8
Advance.....	P. R. R. Monday.....	July 14
Panama.....	P. R. R. Sunday.....	July 20
Allianca.....	P. R. R. Saturday.....	July 26
Colon.....	P. R. R. Thursday.....	July 31
Advance.....	P. R. R. Thursday.....	Aug. 7
Panama.....	P. R. R. Wednesday.....	Aug. 15
Allianca.....	P. R. R. Tuesday.....	Aug. 19
Colon.....	P. R. R. Sunday.....	Aug. 24
Advance.....	P. R. R. Sunday.....	Aug. 31

NEW YORK TO COLON.

Santa Marta.....	U. F. C. Wednesday.....	June 11
Pastores.....	U. F. C. Saturday.....	June 14
Metapan.....	U. F. C. Wednesday.....	June 18
Thames.....	R. M. Saturday.....	June 21
Tivives.....	U. F. C. Saturday.....	June 21
Prinz August Wilhelm H.-A.....	Saturday.....	June 21
Zacapa.....	U. F. C. Wednesday.....	June 25
Emil L. Boas.....	H.-A. Saturday.....	June 28
Sixtoia.....	U. F. C. Saturday.....	June 28
Almirante.....	U. F. C. Wednesday.....	July 2
Carrillo.....	U. F. C. Saturday.....	July 5

COLON TO NEW YORK.

Almirante.....	U. F. C. Thursday.....	June 19
Trent.....	R. M. Tuesday.....	June 24
Carrillo.....	U. F. C. Tuesday.....	June 24
Prinz Joachim.....	H.-A. Tuesday.....	June 24
Santa Marta.....	U. F. C. Thursday.....	June 26
Pastores.....	U. F. C. Tuesday.....	July 1
Metapan.....	U. F. C. Thursday.....	July 3

NEW ORLEANS TO COLON.

Atenas.....	U. F. C. Saturday.....	June 14
Parismina.....	U. F. C. Wednesday.....	June 18
Turrialba.....	U. F. C. Saturday.....	June 21
Cartago.....	U. F. C. Wednesday.....	June 25
Abangarez.....	U. F. C. Saturday.....	June 28
Heredia.....	U. F. C. Wednesday.....	July 2
Atenas.....	U. F. C. Saturday.....	July 5

COLON TO NEW ORLEANS.

Abangarez.....	U. F. C. Thursday.....	June 19
Heredia.....	U. F. C. Saturday.....	June 21
Atenas.....	U. F. C. Thursday.....	June 26
Parismina.....	U. F. C. Saturday.....	June 28
Turrialba.....	U. F. C. Thursday.....	July 3
Cartago.....	U. F. C. Saturday.....	July 5

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays at 3 p. m.; ships for New York via Kingston on Tuesdays at 1.30 p. m. and Thursdays at 1.30 p. m.; for Bocas del Toro on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct, Tuesdays at 3 p. m.

Hamburg-American steamers sail for New York, via Kingston and Santiago de Cuba, on Tuesdays; the *Prinz Joachim* and *Prinz August Wilhelm* at 10 a. m. and the *Emil L. Boas* and *Carl Schurz* at 2 p. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending June 14:

Arrivals—June 8, *Yorktown* from Corinto; *City of Sydney*, from San Francisco; June 9, *Mexico*, from south; *Ucayali*, from south; June 10, *Hualaga*, from south; June 12, *Aztec*, from San Francisco; *Barrocauta*, from Central America; June 13, *Chile*, from Guayaquil; *Ecuador*, from Guayaquil and intermediate ports.

Departures—June 9, *Hualaga*, to south; *City of Sydney*, to San Francisco; *Huasco*, to south; June 10, *Ucayali*, to south; June 12, *Peru*, to San Francisco.

CANAL



RECORD

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No. 44.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is published free of charge, one copy each to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Acting Chairman's Report.

The report of the Acting Chairman of the Isthmian Canal Commission for the month of May is published in full in this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Gatun Lake to Rise After July 1.

The gates controlling the three sluices through the ogee of the Gatun spillway dam are to be closed on July 1. Unless circumstances demand a change of policy, Gatun lake will be allowed to fill to operating level.

In preparation for the rise, forces of the Atlantic Division are installing horizontal bulkheads in three counterweight pits which intersect the sluices. These are to protect the operating tunnel against flooding by water forced into the pits from below. The permanent arrangement contemplates filling the sluices with concrete; after this, the bulkheads may be removed from the pits and the remaining counterweights installed.

Dredges in Forebay of Gatun Locks.

During the time the forebay at the lower end of Gatun Locks was protected from inundation by the means of the earth barrier to the north, pipeline suction dredges advanced the completion of the channel to the outer side of the barrier. Following the completion and closing of the lower guard gates, the forebay was filled to sealevel with water pumped in by the dredges outside. Sealevel was attained on June 20, and on the morning of June 21, the dredges began to cut through, and during the night of June 23-24, pipeline suction dredges No. 4 and No. 86 passed into the forebay. They, and No. 83, which was already in the forebay, after excavation of the lower approach, are now engaged on the south, or locks, side of the barrier.

The barrier supports the railroad connecting the tracks on the west side of the locks,

and on Gatun Dam, with the Panama railroad. A committee is seeking a plan for preserving this track as long as it is compatible with excavation progress. The entrance of the dredges was made through the steel queen-truss bridge with a 40-foot span, erected by the Atlantic Division at the time the first dredging was performed south of the barrier. The span was lifted out by a wrecking crane to allow the passage of vessels, and then replaced for the resumption of traffic to the west side.

Reduced Consumption of Cement.

When the masonry construction of the locks was in full swing, delivery of cement from the United States at one period amounted to as much as 7,000 barrels for each working day, though the average daily delivery was less; and a stock supply of from one hundred to two hundred thousand barrels was maintained on the Isthmus to provide against delays in shipment. As the mass masonry has been completed, the rate of delivery has been gradually reduced until at the present time the rate is only 1,500 barrels per day. It is estimated that receipts at this rate with stock on hand will maintain a reserve, beginning July 1, of about 50,000 barrels.

Erection of Administration Building Begun.

Erection of steel framework for the permanent Administration building, on a knoll on the north side of Ancon Hill, overlooking the new Balboa townsite, began on June 20, and about a dozen of the columns for the exterior walls are now in place. Some of the steel for this building was stored temporarily at the east end of the site for the foundry building of the Balboa terminals, awaiting the completion of track facilities at the Administration building. It is to be removed before the end of the month and the space used for the storage of coke and pig iron, preparatory to the occupation of the foundry. Further shipments of structural steel for the Administration building are expected to arrive as fast as the erection force can handle the construction.

Progress on New Planing Mill.

The first roofing for the Balboa terminals was laid on June 18, when forces of the American Cement Tile Manufacturing Company began operations on the north slope of the north half of the planing mill. Work on this slope began at the western end and advanced toward the east; the section was practically completed on June 24. Progress in this work is rapid; the three-foot slabs are hoisted to the roof by a donkey engine, and placed like shingles, grooves in their edges engaging the purlins and the adjoining slabs. Six box cars have been transferred from the regular freight service of the Panama railroad, to haul roofing from the company's manufacturing plant at

Paraiso to the various permanent buildings at the terminals.

The riveting of the erected framework for the planing mill was completed on June 24. Machinery foundations and the reinforced concrete flooring for the building are being advanced by forces of the Second Division, under the supervision of Mr. J. A. Close, and should be completed by July 5. Arrangements are being made to obtain on the Isthmus motors for driving the machines in this building until the motors under order from the United States shall have been delivered and installed. A temporary transmission line is being carried into the building from the East Balboa electric plant, in the expectation of having the new planing mill in readiness for the scheduled moving of machinery from the Gorgona mill about July 7.

Framework for Four Buildings Shipped.

The local representative of the United States Steel Products Company, which has the contract for the steel for the permanent buildings at Balboa, has been advised that the framework for the machine shop, the steel shed, the paint shop, and the gas house, were shipped complete on June 17, from Baltimore. Forces of the Second Division at Balboa are engaged in setting the masonry plates on the foundation piers for these buildings, and in laying tracks to facilitate their erection.

Conversion and Transfer of Launch "Ruth."

The Sixth Division has transferred to the Mechanical Division the steam launch *Ruth*, heretofore a part of the dredging fleet in the Atlantic entrance. Under the arrangements for transfer, the boiler, engine, etc., will be turned into the Quartermaster's Department for re-issue, and the Mechanical Division will install in the hull the 6-cylinder gasoline engine recently removed from motor car No. 4. The *Ruth* has been in use by forces of the Second Division, engaged in measuring currents in Limon Bay; it will be required by them about a month longer, after which it will be assigned to the Cristobal marine shops for hauling employes and material.

Hollow Concrete Tile Block Manufacture.

Mr. Albert A. Pauley, patentee of a special process for making concrete tile blocks, has been employed by the Canal Commission to superintend the erection of a plant on the Isthmus for the manufacture of these blocks, out of which most of the permanent buildings at the new town of Balboa will probably be constructed. Mr. Pauley will remain until the work of making the blocks is well under way, and until others have been thoroughly instructed in the operation of the machines. The hollow blocks will be produced by what is known as the Pauley steam jacket process, making it possible to turn out a block with each machine every five minutes. The blocks are kept under a constant spray for one day,

and are then allowed to set for about a week, when, normally, they are ready for use. Twelve machines for the manufacture of these blocks have been purchased, as follows: Two machines for foundation blocks, 12 by 12 by 18 inches; four for main wall blocks, eight by 12 by 12 inches; two for corner blocks, 8 by 8 by 16 inches; one for partition blocks, 6 by 12 by 12 inches; two for partition blocks, 4 by 12 by 12 inches; and one for interior columns, 3 by 12 by 12 inches. The hollow concrete tile block plant will be under the general supervision of the resident engineer of the Fifth Division.

Concrete Work in Locks and Spillways.

Concrete work in the Canal locks is nearly completed, the aggregate amount in place at the close of work on June 21, being 4,471,463 cubic yards.

A statement of the concrete laid in the three sets of locks for the Canal, and in Gatun and Miraflores spillways, as of June 21, follows:

GATUN LOCKS.		Concrete laid
June 16.....		126
June 17.....		76
June 18.....		48
June 19.....		84
June 20.....		58
June 21.....		92
Total.....		484
Previously reported.....	2,039,961	
Grand total.....	2,040,445	
PEDRO MIGUEL LOCK.		
June 16.....		
June 17.....		
June 18.....		6
June 19.....		3
June 20.....		
June 21.....		40
Total.....		49
Previously reported.....	921,201	
Grand total.....	921,250	
MIRAFLORES LOCKS.		
June 16.....		9
June 17.....		6
June 18.....		12
June 19.....		10
June 20.....		108
June 21.....		128
Total.....		273
Previously reported.....	1,503,066	
Grand total.....	1,503,339	
GATUN SPILLWAY.*		
June 16.....		90
June 17.....		112
June 18.....		102
June 19.....		40
June 20.....		80
June 21.....		146
Total.....		570
Previously reported.....	227,630	
Grand total.....	228,200	
MIRAFLORES SPILLWAY.		
June 16.....		1,112
June 17.....		1,188
June 18.....		1,117
June 19.....		940
June 20.....		898
June 21.....		604
Total.....		5,859
Previously reported.....	56,887	
Grand total.....	62,746	

*Includes hydroelectric station.

Work of Lidgerwood Unloaders in May.

During the month of May, the following Lidgerwood trains and cars were unloaded by the Central Division:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa.....	5*	924	19,404
Miraflores.....	1	211	4,431
Gamboa.....	4	965	20,265
Total.....	10	2,100	44,100

*One unloader worked from the 1st to the 14th.

PLANS FOR THE FOURTH.

Means Taken for the Convenience of Guests—List of Committees.

Col. W. C. Gorgas finds that he will be unable to deliver the address at the Fourth of July celebration at Cristobal, and Judge H. A. Gudger, has consented to fill his place on the program. Mr. Frank A. Gause, superintendent of schools, will read the Declaration of Independence. In all other respects, the program will be carried out as published in THE CANAL RECORD of June 11.

Captain Sukeforth of the *Ancon*, and Captain Mowbray of the *Colon*, have agreed to the use of their ships as resting places for women and children on the Fourth. Maids will be in attendance on both ships.

Rest and toilet rooms for women and children, with maids in attendance, will also be found in the Cristobal schoolhouse, located between the Y. M. C. A., and the I. C. C. hotel; and on the lower floor of building No. 2, on Roosevelt avenue.

There will be a parcel check room at the south end of the Cristobal commissary, open from 8.30 a. m., until the departure of the last train.

Lemonade and ice water will be served at several points on Roosevelt avenue and Dock 16 during the day and evening.

There will be a free merry-go-round for the children on Roosevelt avenue, at which a number of soldiers will be stationed to afford protection to the children while it is running.

Swimming will be permitted in the slip between Piers 16 and 17, except during the afternoon aquatic events. Dressing rooms for men and women will be provided on Pier 16. The police department and the Cristobal bathing club will have a launch and rowboats in the slip to protect the bathers.

Articles lost and found should be reported to Scoutmaster Ernest C. Bell, in charge of boy scout headquarters, in tent north of Cristobal fire station. A squad of boy scouts will be on duty to give any assistance required.

For the information of those desiring to find friends, etc., a map of Cristobal, and list of occupants of quarters will be available at boy scout headquarters.

Ice cream will be served to all at lunch, and, during the afternoon to children holding tickets, which may be obtained from any member of the refreshment committee. A booth for the sale of ice cream throughout the day will be located on Roosevelt avenue.

If the demand warrants it, an orchestra will be provided for informal dancing on Dock 16 between the hours of 4 and 5 p. m.

The reception committee of the Strangers Club will welcome visitors all day at their clubhouse. The dining room will be open for breakfast from 6 to 9.30; luncheon, 11.30 to 1.30; dinner, 6 to 8; coffee and light refreshments will be served any hour. The ladies' room will be provided with all necessary conveniences, and a matron will give any assistance necessary. Visitors' cards may be had from members.

The final meeting of the executive committee will be held at the Strangers' Club, Colon, on Saturday, June 28, at 2 p. m.

The complete list of committees is, as follows:

Executive committee—Mr. Tom M. Cooke, chair-

Fireworks committee—Capt. R. E. Wood, U. S. A., chairman; James A. Avery, C. O. Simmons, A. D. Fisher, F. H. Stephens, Geo. Buchan.

Transportation committee—John D. Patterson, chairman; R. L. Mock, A. K. Stone, C. W. Northrop, A. S. Jussen, J. C. Angel, W. C. Chester, A. B. Simkins.

Finance committee—E. J. Williams, chairman; George A. Arias, Harry E. Bovay, J. O. Childers, C. D. Christie, J. C. Craddock, W. L. Daniels, P. G. Eastwick, John Ehrman, L. H. Farquharson, W. A. Fawks, Robert Feuillebois, Joseph Fidanque, F. Fitzpatrick, Ralph Fogle, James Forsythe, M. L. French, L. L. Gilkey, Capt. Frank Halford, E. B. Hartley, H. A. Haywood, H. A. Jackson, Ben Jenkins, A. S. Jussen, J. C. Keller, E. R. King, H. Livingston, C. H. Mann, Joshua L. Maduro, J. W. Mullin, A. D. McElroy, W. E. McFee, Fred C. Nichols, G. A. Ninas, E. W. Palmer, Claude C. Pierce, S. C. Potts, A. Richardson, W. G. Russell, W. R. Sergeant, R. P. Seyse, W. M. Sterritt, W. A. Torbert, James C. H. Van Reed, Maj. P. R. Ward, R. H. Wardlaw, Robert Wilcox, H. R. Wilford, J. C. Wood, J. W. Wright.

Publicity and printing committee—W. C. Haskins, chairman; A. P. E. Doyle, John O. Collins.

Dance committee—Dr. M. E. Connor, chairman; C. W. Lee, Wm. F. Bennyhoff.

Entertainment committee—Capt. F. O. Whitlock, chairman.

Subcommittee on athletics—C. C. Carr, chairman; F. G. Swanson, W. H. Payne, Lieut. J. H. Malony, Lieut. E. A. Osterman, H. H. Hammer, D. T. Edwards, J. W. Wright, R. A. Koperski, Herbert Bartholomew, J. T. Neeley, P. T. Woolworth.

Subcommittee on water sports—W. J. White, chairman; C. L. Vandeburg, C. T. Owens, D. Wilson, J. St. C. Hunt, Earl R. Parsons, George B. Ward, A. B. Hendricks, W. J. Shutes, William Carter, S. P. Hughlings, L. A. McMahon.

Subcommittee on stands and decorations—Capt. Courtland Nixon, chairman. Stands—Mr. J. T. B. Bowles, Mr. Jury, Mr. J. M. Weaver, Mr. Gallagher, Mr. Mohrman. Decorations—Messrs. W. F. Bennyhoff, W. T. McCormack, W. E. Stevens, J. A. Avery, Holland, Horle, Robert Beverly, C. W. Lee, J. W. Barrett, A. L. Kunce, Carl J. Yeiser, W. H. Davenport, Neilson, A. L. Chambers, W. E. Burrell, R. V. French, W. H. Payne, P. W. Reese.

Subcommittee on Tenth Infantry—Capt. O. S. Eskridge, chairman; Lieut. J. H. Malony.

Subcommittee on U. S. Marine Corps—Lieut. Edward A. Osterman.

Subcommittee on reception—Mr. John Burke, chairman; Messrs. W. G. Comber, H. O. Cole, Col. H. A. Greene, J. M. Hyatt, Col. W. V. Judson, Dr. C. C. Pierce, A. L. Robinson, Col. W. L. Sibert, W. F. Shipley, Robert Wilcox, E. J. Williams, Col. E. T. Wilson.

Subcommittee on refreshments—Mr. C. M. Bullard, chairman; Messrs. William Brugge, Walter Poore, E. R. Bradford, C. B. Austin, S. M. White, H. G. Sivell, G. S. Edwards, Maynard Benson, R. R. Watson, Carl Strom, John Doyle, W. C. Cousineau.

Subcommittee on program and prizes—Mr. D. W. MacCormack, chairman; Messrs. J. G. Barber, G. K. Weston, E. J. Schulte, W. H. Davenport, W. V. Callahan, H. W. McCally.

Subcommittee on exercises—Mr. A. B. Dickson, chairman; Mr. Ernest C. Bell.

Subcommittee on fire department—Mr. C. E. Weidman, chairman.

Subcommittee on police department—Lieut. Guy Johannes, chairman; Sergt. L. C. Callaway, Sergt. John H. Poole.

OFFICIALS FOR ATHLETIC MEET.

C. C. Carr, chairman, subcommittee on athletics; referee, F. G. Swanson; clerk of course, J. H. Weller; assistant clerk of course, R. H. Sartor; starter, Gus Gustavson, announcer, E. L. Emory; assistant announcers, G. K. Weston, William Fraser; timekeepers' Lieut. J. H. Malony, U. S. A., Fred Huber, G. Keller, A. L. Prather, J. E. Siler, Lieut. E. A. Osterman, U. S. M. C.; track judges, E. L. Koperski, Lieut. A. A. Vandegrift, U. S. M. C., Q. A. Hall, Lieut. W. H. Wilbur, U. S. A.; field judges, Lieut. J. C. Smith, U. S. M. C., Lieut. F. C. Sibert, U. S. A., Reed Morris, E. D. Christopherson; scorer, W. H. Payne; inspectors, Mark A. Hall, Stanley R. Ford, I. H. Fleischman; marshal, Lieut. Guy Johannes.

OFFICIALS FOR AQUATIC EVENTS.

W. J. White, chairman, subcommittee on water sports; referee, Lieut.-Col. W. V. Judson; judges, Capt. M. W. Mowbray, Capt. G. E. Sukeforth, Messrs. F. C. Stanton, N. Langvardt, A. F. Symms, R. E. Tull, J. Constantine, R. Osborn; sergeant-at-arms, Mr. C. A. Black; clerks, J. F. Everett, F. F. Zundell, J. F. Prager; starters, C. J. Reilly, A. R. MacDaniels; timekeepers, J. G. Claybourn, A. M. Vaughn, R. Granger; announcers, G. C. Dow, S. E. Foster.

JOINT LAND COMMISSION.

Opinion of the Commission on Questions Governing Awards to Certain Claimants.

Status of settlers or occupiers on public lands in the Canal Zone who went upon such lands prior to the conclusion of the Treaty of November 18, 1903, and who did not subsequently receive leases or licenses issued by the Isthmian Canal Commission.

With reference to the status of such occupiers, it is clear that under the provisions of the Laws of the United States of Colombia and subsequently of the Republic of Panama, cultivators on public lands acquire a right to compensation for improvements, which rights were not divested by anything contained in the Treaty of November 18, 1903, or by the change of sovereignty effected by that Treaty.

The rights of occupiers on public lands of the United States of Colombia to compensation for improvements made thereon, are governed by Law No. 48 of 1882, which contains the following provisions (Art. V.):

"Cultivators settled on public lands with dwelling, and cultivating such lands, shall be considered as possessors in good faith of such lands, and shall not be deprived of the possession of such lands, except by due process of law. (Art. 2.)

"In case a cultivator should be deprived of his property through due process of law, he shall not be dispossessed of the land occupied by him without first being indemnified to the extent of the value of the improvements made on the land, as possessor in good faith of the land.

"Improvements shall consist of clearing of the land, embankments, cultivation, and dwellings, the value of which shall be appraised by experts, as provided for in the Judicial Code of the nation or of the state in which the adjudicated land is located.

"Until the value of such improvements shall have been paid, there shall not exist against the possessor any action for ejectment from the land." (Art. 5.)

In the case of the United States vs. Andrade (I Canal Zone Supreme Court Reports, 64) the Supreme Court of the Canal Zone had under consideration the status of an occupier of public lands of the United States of Colombia, and subsequently of the Republic of Panama.

In passing on the rights of such occupier, the lower court said (Circuit Court of the Second Judicial Circuit):

"The fact that the defendant remained in undisturbed possession of the land for such a length of time, and that he has improved the same, would certainly give him a moral right, if indeed he has not a legal one, for any and all improvements that he has placed on the land."

On appeal to the Supreme Court of the Canal Zone, the Court (Vol. 1, p. 75, Canal Zone Supreme Court Reports), after citing the provisions of Articles 2 and 5 of Law No. 48 of 1882, said:

"The defendant, besides being considered to all effects by law as a possessor in good faith of the land occupied by him and having occupied it undisturbedly with the knowledge and consent of the Colombian authorities, is entitled to the rights provided for by Article 739 of the Civil Code*, which article provides for the payment of the improvements made on the land."

The Commission rules, therefore, that in all those cases in which rights accrued prior to November 18, 1903, to occupiers or settlers on public lands, such rights were not divested by the Treaty of November 18, 1903, and that such settlers or occupiers are entitled to compensation for such rights as have accrued.

II.

Status of settlers or occupiers who were found by the United States occupying public lands, who went upon such lands prior to the Treaty of November 18, 1903, and who subsequently accepted leases or licenses issued by the

Isthmian Canal Commission.

With reference to such persons the Commission rules that the rights which accrued to such persons prior to the conclusion of the Treaty of November 18, 1903, were not divested by the subsequent acceptance of leases or revocable licenses, and that such claimants are, therefore, entitled to compensation for such rights as have accrued, and that awards by the Commission will be made accordingly.

III.

The Commission reserves for further consideration the status of the following persons:

1. Occupiers on public lands of the United States of America situated in the Canal Zone, who went upon such lands subsequent to the conclusion of the Treaty of November 18, 1903 (It is understood that the persons herein referred to do not hold Isthmian Canal Commission leases.)

2. Occupiers on public lands of the United States of America within the Canal Zone, who went upon such lands after the Treaty of November 18, 1903, and who subsequent to such entry accepted leases or revocable licenses from the Isthmian Canal Commission.

(Signed) FEDERICO BOYD, ROLAND P. FALKNER, SAMUEL LEWIS, L. S. ROWE—JOINT LAND COMMISSION.

* Art. 739. "The owner of land upon which another person without his knowledge, shall have built, planted, or sowed, shall have a right to make the building, planting, or sowing his own, upon the compensation prescribed in favor of possessors in good or bad faith in the Title of *Revendication*, or to oblige the person who built or planted to pay him a just price for the land with legal interest, for all the time he may have had possession thereof, and the one who sowed to pay him the rental and indemnify him for damages.

"If the building, planting, or sowing shall have taken place with the knowledge and consent of the owner of the land, he shall be obliged, in order to recover it, to pay the value of the building, planting, or sowing." (Civil Code of Panama, p. 166.)

Announcement of Awards.

The Joint Land Commission announced three awards on Tuesday, June 24, as follows:

1. *In the matter of the estate of Bailamonos Sur*—To the owners of the land for all rights, claims, or interest, including any improvements which may be claimed by them, the sum of \$23,000 to be distributed, as follows: Rafael Aizpuru, \$11,500; Gustavó Barrio, \$2,300; Aurora Barrio, \$2,300; Abigail Barrio, \$2,300; heirs of Narciso Barsallo, \$4,600. The sum last mentioned is to be paid into the Circuit Court of the Second Judicial Circuit at Empire to be distributed by that Court among the Barsallo heirs. The award provides, in addition, the distribution of \$12,455, in varying sums, among 65 persons, as owners of improvements, for the settlement of all rights, claims, or other interest in all growing crops, fruit trees, buildings, and all other improvements of all other kinds and all other rights claimed in land located on this estate. There are 20 occupiers of land on this estate, whose claims are still pending before the commission.

2. *In the matter of the estate of Juan Grande, located on the west bank of the Chagres River*—To the owners of the land, for all right, claim, or interest therein, including any improvements which may be claimed by them, the sum of \$10,000, to be paid into the Circuit Court of the Second Judicial Circuit at Empire, to be distributed by that Court to the several parties in interest, as the amount of their interest shall be adjudicated by the Court. The award provides, in addition, the sum of \$10,640 to be distributed among 79 persons,

as owners of improvements, for the settlement of all rights, claims, or other interest in all growing crops, fruit trees, buildings, and all other improvements of every kind, and all other rights claimed in land located on this estate. There are 12 occupiers of land on this estate, whose claims are still pending before the commission.

In connection with this claim, an opinion was handed down by the commission on Tuesday, June 24, setting forth that "On the seventeenth day of June, 1908, Manuel Espinosa B., and Manuel Amador Guerrero signed a memorandum of agreement, under which they contracted to convey to the United States the high and dry lands of the estate of 'Juan Grande,' whether improved or unimproved, at the rate of \$5 per hectare.

"Counsel for the United States has urged that, under the terms of this agreement, Manuel Amador Guerrero and Manuel Espinosa B., are under legal obligations to execute warranty title to the United States for all of their interest in the lands of 'Juan Grande,' or at least for that portion as might reasonably have been contemplated by the parties at the time of the making of this agreement.

"The United States, for reasons which were no doubt good and sufficient, refrained from taking any steps looking to the enforcement of this agreement prior to the institution of proceedings before this commission. It is clear that in no case can this commission be the proper forum in which to secure the specific performance of such a contract.

"It is of the essence of expropriation proceedings, not only in the United States, but in all countries of the world, that just compensation for property taken be given, and that the determination is vested in some tribunal whose decision rests on its estimate of the fair value of the property. The willingness of the owners of such property to sell at a certain price cannot in any case govern the conclusions of such a tribunal, especially when such willingness was expressed five years before the institution of expropriation proceedings. The powers conferred on this commission by Article 6 of the Treaty concluded between the United States of America and the Republic of Panama, November 18, 1903, places upon this commission the obligation to appraise the value of this estate.

"The commission rules, therefore, that the provisions of Article 6 of the Treaty of November 18, 1903, places upon it the obligation to appraise the value of the estate of 'Juan Grande' independent of the provisions of the memorandum of agreement of June 17, 1908."

3. *In the matter of the claims of occupiers, located in the area comprised within the relocated line of the Panama railroad and the Canal prism, extending from Gatun to Gamboa*—To 16 owners of improvements, for settlement of all rights, claims, or other interest in all growing crops, fruit trees, and buildings, and all other improvements of every kind, and all other rights and claims in the above lands, the sum of \$2,080.

In each of the above cases, the awards are to be paid to the respective claimants within 15 days from the date of their certification to the Examiner of Accounts, and if payment, or tender of payment of any of the items of the awards are not made on or before that date, such items shall, thereafter, bear interest at the rate of six per cent per annum until paid,

CANAL WORK IN MAY.

Monthly Report of the Acting Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., June 15, 1913.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of May, 1913:

Department of Construction and Engineering.

Effective May 1, 1913, the following changes were made in the organization of this department:

The dredging work in the Atlantic Division, together with the dredges, barges and forces in that service, were transferred to the Sixth Division of the Chief Engineer's Office, thus consolidating all dredging under the supervision and direction of the resident engineer, Mr. W. G. Comber.

The dry dock and its shops were transferred to the Mechanical Division.

Arrangements were effected between the division engineer of the Atlantic Division and the resident engineer of the Sixth Division for the joint use of tugs, as well as other facilities, forces, etc., that can be utilized to advantage by both interests.

The following table summarizes the principal items of work accomplished by the construction divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	2d Div.	5th Div.	6th Div.	Total.
Work excavation, dry.	Cubic yds...	1,829	921,000	53,215	264,919	369,703	1,240,963
Work excavation, wet.	Cubic yds...	688,554		*194,510			1,252,767
Total work excavation	Cubic yds...	690,383	921,000	247,725	264,919	369,703	2,493,730
Plant excavation, dry.	Cubic yds...			13,076			13,076
Plant excavation, wet.	Cubic yds...	272,726					272,726
Total plant excavation	Cubic yds...	272,726		13,076			285,802
Total Canal excavation.	Cubic yds...	963,109	921,000	260,801	264,919	369,703	2,779,532
Material placed in dams.	Cubic yds...	93,449			12,670		106,119
Concrete placed, locks, dams and spillways.	Cubic yds...	14,645			26,837		41,482
Explosives used.....	Tons (Gross)	28.42	98.35	10.31	57.18	44.3	238.56
Rock drilled.....	Feet.....	14,125	245,700	30,196	89,094	23,004	402,119
Tracks removed.....	Miles.....	0.33	5.49	1.85	1.33		9.00
New tracks laid.....	Miles.....	2.56	13.61	2.33			18.50
Rock crushed.....	Cubic yds...				29,274	41	29,315
Cement used.....	Barrels.....	19,778	161	4,872	25,719		50,530
New roads built.....	Miles.....				0.47		0.47
Water mains laid.....	Feet.....	1,840			11,858		13,698
Sewers laid.....	Feet.....				5,264		5,204
Open drains and ditches dug.....	Feet.....	38,300		3,700	475		42,475
Average daily force.....		3,616	6,962	1,883	5,706	2,245	20,412
Average rainfall.....	Inches.....	19.83	14.30	8.04	13.48	8.04	14.70

*Accomplished by 5th division for the 2d division.

First Division, Office of the Chief Engineer.

INSPECTION OF INSTALLATION OF RISING STEM GATE VALVES, ERECTION OF SPILLWAY CAISSONS, AND OF ASSEMBLY OF HYDROELECTRIC STATION DRAFT TUBES AT GATUN.

Inspection work was continued in connection with the erection of the spillway caisson for Miraflores and the inspection reports show that the same was completed on May 31.

Work on the preparation of rising stem gate valve machinery chambers was continued; at the close of the month this work was about 99 per cent completed at Gatun, 95 per cent completed at Pedro Miguel; and 75 per cent completed at Miraflores.

Inspection of the assembly and riveting of draft tubes for the Gatun hydroelectric station was continued.

LOCK GATES AND PROTECTIVE DEVICES.

At the close of the month, a total of 51,664 tons of riveted structural steel had been shipped from the Rankin shops for the 92

leaves which are being erected. Shipments for these leaves have now been completed, with the exception of a few odd parts. The status of the work in the several locks may be summarized, as follows:

Gatun—Work in progress on all the leaves, 40 in number: Erection, 97 per cent completed; reaming, 99 per cent completed; riveting, 95 per cent completed; finishing, 25 per cent completed.

Pedro Miguel—Work was in progress on the entire 24 leaves: Erection, 96.4 per cent completed; reaming, 98.5 per cent completed; riveting, 93 per cent completed; finishing, 25 per cent completed.

Miraflores—Work was in progress on all of the 28 leaves: Erection, 86.6 per cent completed; reaming, 86.5 per cent completed; riveting, 64 per cent completed.

At the close of the month, a total of 4,904,980 field rivets had been driven, of which about 490,000 were driven during the month.

CHAIN FENDERS.

The casting of material for the chain fenders at the works of the contractor in the United States has been rather slow, although a considerable number of heavy steel castings for the main cylinder, which are cast steel and somewhat difficult to cast, have been successfully made, with practically no rejections.

FIXED IRONS AND TRACKS, RISING STEM AND GUARD VALVES.

	Gatun—124	Pedro Miguel—60
	Milled or Ground.	Milled or Ground.
During mo.		
To date.....	124	18

	Miraflores—84
	Milled or Ground.
During month.....	12
To date.....	66

RISING STEM GATE VALVE MACHINES (MECHANICAL).

	Gatun—56.		
	Received.	Partially installed.	Installed
During month.....		12	12
To date.....	56	5	51

	Pedro Miguel—24		
	Received.	Partially installed.	Installed.
During month.....		2	2
To date.....	24		24

	Miraflores—36.		
	Received.	Partially installed.	Installed.
During month.....	1	4	4
To date.....	36	8	8

RISING STEM GATE VALVE MACHINES (ELECTRICAL).

	Gatun—56		Pedro Miguel—24	
	During mo.	To date.	During month.	To date.
Motor connected....	10	28	3	3
Limit switch:				
Installed.....	2	47	2	24
Connected.....	5	43	12	12
Indicator transmitter:				
Installed.....				
Connected.....				
Contactor panel:				
Installed.....	6	48		
Connected.....			4	4
Elect. work started..	2	52		24
Work completed.....				

	Miraflores—36	
	During month.	To date.
Motor connected.....		
Limit switch:		
Installed.....		10
Connected.....		14
Indicator transmitter:		
Installed.....		
Connected.....		
Electrical work started..		10
Work completed.....		14

GUARD VALVE MACHINES (MECHANICAL).

	Gatun—6.		
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

	Pedro Miguel—6.		
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

	Miraflores—6.		
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

GUARD VALVE MACHINES (ELECTRICAL).

	Gatun—6.		
	Received.	Partially installed.	Installed.
During month.....			
To date.....			

The following tabulations give the status of mechanical and electrical work at the Gatun, Pedro Miguel, and Miraflores Locks; and at Gatun spillway:

RISING STEM GATE VALVES.

	Gatun—56		Pedro Miguel—24	
	Assembled.	Placed.	Assembled.	Placed.
During mo.	4	4	24	24
To date.....	54	54		

	Miraflores—36	
	Assembled.	Placed.
During month.....		4
To date.....		26

	Gatun—6		Pedro Miguel—6	
	Assembled.	Placed.	Assembled.	Placed.
During mo.	6	6		
To date.....				

	Miraflores—6.	
	Assembled.	Placed.
During month.....		
To date.....		

Pedro Miguel—6.			
	Received.	Partially installed.	Installed.
During month			
To date			

Miraflores—6.			
	Received.	Partially installed.	Installed.
During month			
To date			

CYLINDRICAL VALVE MACHINES (MECHANICAL).

Gatun—60.			
	Received.	Partially installed.	Installed.
During month			
To date	60	5	55

Pedro Miguel—20.			
	Received.	Partially installed.	Installed.
During month			
To date	20		20

Miraflores—40.			
	Received.	Partially installed.	Installed.
During month			
To date	40	10	40

CYLINDRICAL VALVE MACHINES (ELECTRICAL).

		Gatun—60		Pedro Miguel—20	
		During mo.	To date.	During month.	To date.
Motor connected		59		11	11
Limit switch:					
Installed	4	59			20
Connected	0	30		5	15
Indicator switch:					
Installed	5	59			10
Connected	0	30		10	10
Contactor panel:					
Installed		60			20
Connected					2
Electrical work:					
Started		60			20
Completed					

Miraflores—40

		During month.	To date.
Motor connected		1	1
Limit switch:			
Installed		10	40
Connected		1	1
Indicator switch:			
Installed			20
Connected		1	1
Contactor panel:			
Installed		27	36
Connected			
Electrical work:			
Started			40
Completed			

AUXILIARY CULVERT VALVE MACHINES (MECHANICAL).

Gatun—4.			
	Received.	Partially installed.	Installed.
During month			
To date	4		4

Pedro Miguel—4.			
	Received.	Partially installed.	Installed.
During month			
To date	4		4

Miraflores—4.			
	Received.	Partially installed.	Installed.
During month			
To date	4	1	1

AUXILIARY CULVERT VALVE MACHINES (ELECTRICAL).

		Gatun—4		Pedro Miguel—4	
		During mo.	To date.	During month.	To date.
Motor connected		2		4	4
Limit switch:					
Installed		4			4
Connected		2			
Indicator switch:					
Installed		4			4
Connected		2		4	4
Contactor panel:					
Installed		4			4
Connected					
Electrical work:					
Started		4			4
Completed					

		Miraflores—4.	
		During month.	To date.
Motor connected			
Limit switch:			
Installed		2	4
Connected			
Indicator switch:			
Installed		1	4
Connected			
Contactor panel:			
Installed			4
Connected			
Electrical work:			
Started			4
Completed			

MITER GATE MOVING MACHINES (MECHANICAL).

Gatun—40.			
	Received.	Partially installed.	Installed.
During month			
To date	40	1	1
		31	8

Pedro Miguel—24.			
	Received.	Partially installed.	Installed.
During month			
To date	24	22	2

Miraflores—28.			
	Received.	Partially installed.	Installed.
During month			
To date	10	4	
	28	28	

MITER GATE MOVING MACHINES (ELECTRICAL).

		Gatun—40.		Pedro Miguel—24.	
		During mo.	To date.	During month.	To date.
Motor connected					2
Limit switch:					
Installed	7	36		2	11
Connected		5			
Commutating switch:					
Installed	7	36		4	13
Connected		5			
Indicator transmitter:					
Installed		1			
Connected					
Aux. cut-out switch:					
Installed		1			
Connected					
Contactor panel:					
Installed	8	34		4	18
Connected				4	4
Electrical work:					
Started	6	36			20
Completed					

		Gatun—40.		Pedro Miguel—24.	
		During mo.	To date.	During month.	To date.
Motor connected					2
Limit switch:					
Installed	7	36		2	11
Connected		5			
Commutating switch:					
Installed	7	36		4	13
Connected		5			
Indicator transmitter:					
Installed		1			
Connected					
Aux. cut-out switch:					
Installed		1			
Connected					
Contactor panel:					
Installed	8	34		4	18
Connected				4	4
Electrical work:					
Started	6	36			20
Completed					

		Miraflores—28	
		During month.	To date.
Motor connected			
Limit switch:			
Installed			
Connected			
Commutating switch:			
Installed			
Connected			
Indicator transmitter:			
Installed			
Connected			
Auxiliary cut-out switch:			
Installed			
Connected			

MITER GATE MOVING MACHINES (ELECTRICAL) —Con.

Contactor panel:	
Installed	
Connected	
Electrical work:	
Started	
Completed	

MITER FORCING MACHINES (MECHANICAL).

Gatun—20.			
	Received.	Partially installed.	Installed.
During month			
To date	5	1	1
	11	1	2

Pedro Miguel—12.			
	Received.	Partially installed.	Installed.
During month			
To date	9	3	
	12	3	

Miraflores—14.			
	Received.	Partially installed.	Installed.
During month			
To date			

MITER FORCING MACHINES (ELECTRICAL).

		Gatun—20.		Pedro Miguel—12.	
		During mo.	To date.	During month.	To date.
Motor connected					
Limit switch:					
Installed		1	2		
Connected					
Indicator switch:					
Installed					
Connected					
Contactor panel:					
Installed		3	17	2	9
Connected					
Electrical work:					
Started		3	17		10
Completed					

		Gatun—20.		Pedro Miguel—12.	
		During mo.	To date.	During month.	To date.
Motor connected					
Limit switch:					
Installed		1	2		
Connected					
Indicator switch:					
Installed					
Connected					
Contactor panel:					
Installed		3	17	2	9
Connected					
Electrical work:					
Started		3	17		10
Completed					

Miraflores—14.			
	During month.	To date.	
Motor connected			
Limit switch:			
Installed			
Connected			
Indicator switch:			
Installed			
Connected			
Contactor panel:			
Installed			
Connected			
Electrical work:			
Started			
Completed			

		Gatun—14.		Miraflores—8.	
		During mo.	To date.	During month.	To date.
Motor connected					
Limit switch:					
Installed					
Connected					
Indicator switch:					
Installed					
Connected					
Contactor panel:					
Installed					
Connected					
Electrical work:					
Started					
Completed					

SPILLWAY GATE MACHINES (MECHANICAL).

Gatun—14.			
	Received.	Partially installed.	Installed.
During month			
To date	14	3	1
		12	2

Miraflores—8.			
	Received.	Partially installed.	Installed.
During month			
To date	8		

SPILLWAY GATE MACHINES (ELECTRICAL).

		Gatun—14.		Miraflores—8.	
		During month	To date	During month	To date
Motor connected					
Limit switch:					
Installed			1		
Connected					
Indicator switch:					
Installed			1		
Connected					
Contactor panel:					
Installed		1	2		
Connected					
Electrical work:					
Started		1	2		
Completed					

CHAIN FENDER MACHINES (MECHANICAL).

Gatun—16.			
	Received.	Partially installed.	Installed.
During month.....		3	
To date.....	1	*16	

Pedro Miguel—16.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....		*16	

Miraflores—16.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....		*8	

*Covers only hawsepipe and miscellaneous steel work for fenders. Only one machine received.

CHAIN FENDER MACHINES (ELECTRICAL).

Gatun—16.		*Pedro Miguel—16.	
	During mo.	During month	To date.
Motor connected.....			
Limit switch:			
Installed.....		2	
Connected.....			
Local ind. erected and connected.....			
Indicator transmitter:			
Installed.....		2	
Connected.....			
Valve controller attached and connected.....			
Contact panel:			
Installed.....		2	
Connected.....			
Electrical work:			
Started.....		2	
Completed.....			

*Miraflores—16.		During month.	To date.
Motor connected.....			
Limit switch:			
Installed.....			
Connected.....			
Local ind. erected and connected.....			
Indicator transmitter:			
Installed.....			
Connected.....			
Valve controller attached and connected.....			
Contact panel:			
Installed.....			
Connected.....			
Electrical work:			
Started.....			
Completed.....			

*No electrical work started at Pedro Miguel or Miraflores.

HANDRAIL OPERATING MECHANISM (MECHANICAL).

Gatun—36.			
	Received.	Partially installed.	Installed.
During month.....			5
To date.....	36		16

Pedro Miguel—20.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	20		

Miraflores—24.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	24		

HANDRAIL OPERATING MECHANISM (ELECTRICAL).

Gatun—36. Pedro Miguel—20.			
	During mo.	To date.	During month.
Motor connected.....			
Limit switch con.....			

HANDRAIL OPERATING MECHANISM (ELECTRICAL)—Con.

Handrail controller:			
Installed.....	12	33	
Connected.....			
Contact panel:			
Installed.....	7	34	4
Connected.....			18
Electrical work:			
Started.....	7	34	
Completed.....			20

Miraflores—24.			
	During month.	To date.	
Motor connected.....			
Limit switch connected.....			
Handrail controller:			
Installed.....			
Connected.....			
Contact panel:			
Installed.....			
Connected.....			
Electrical work:			
Started.....			
Completed.....			

(MITER GATE RECESS COVERS (MECHANICAL)).

Gatun—36			
	Placed.	Frozen.	Completed.
During month.....		2	1
To date.....	36	36	34

Pedro Miguel—20.			
	Placed.	Frozen.	Completed.
During month.....			1
To date.....	20	20	1

Miraflores—24.			
	Placed.	Frozen.	Completed.
During month.....		2	
To date.....	22	4	

RACK TRACK. (MECHANICAL).
(In one-foot units.)

Gatun—21,945 feet.				
	Dist.	Track laid.	Frozen.	Completed.
During month.....	406	406	492	68
To date.....	20,174	20,174	18,016	17,100

Pedro Miguel—13,213 feet.				
	Dist.	Track laid.	Frozen.	Completed.
During month.....	356	356	169	169
To date.....	11,248	11,248	9,675	9,675

Miraflores—19,031 feet.				
	Dist.	Track laid.	Frozen.	Completed.
During month.....	4,353	4,087	4,264	3,006
To date.....	12,603	11,997	5,821	4,199

RACK TRACK. (ELECTRICAL).
(In one-foot units.)

Gatun.		Pedro Miguel.	
	Steel bar.	Copper bar.	Copper bar.
During month.....	890	2,955	
To date.....	13,046	18,027	7,511
*Total.....	31,073	14,173	

Miraflores.			
	Steel bar.	Copper bar.	
During month.....			
To date.....	5,240	690	

*Total..... 5,930
*Comprising conductor rails, insulators, brackets, and cover plates.

MITER GATE SUMP PUMPS (MECHANICAL).

Gatun—40.			
	Received.	Partially installed.	Installed.
During month.....		7	12
To date.....	40	15	15

Pedro Miguel—24.

	Received.	Partially installed.	Installed.
During month.....		4	1
To date.....	24	7	1

Miraflores—28.

	Received.	Partially installed.	Installed.
During month.....			
To date.....	28		

No electrical work has been accomplished on miter gate sump pumps to date.

CHAIN FENDER SUMP PUMPS (MECHANICAL).

Gatun—16.			
	Received.	Partially installed.	Installed.
During month.....		2	
To date.....	16	2	

Pedro Miguel—16.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	16		

Miraflores—16.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	16		

No electrical work has been accomplished on chain fender sump pumps to date.

DRAINAGE SUMP AND CULVERT PUMPS (MECHANICAL.)

Gatun—4.			
	Received.	Partially installed.	Installed.
During month.....		2	1
To date.....	4	1	1

Pedro Miguel—4.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	4		

Miraflores—4.			
	Received.	Partially installed.	Installed.
During month.....			
To date.....	4		

No electrical work has been accomplished on drainage sump and culvert pumps to date.

TRANSFORMER ROOMS.

Gatun—16.		Pedro Miguel—8.	
	During mo.	To date.	During month.
Installed:			
Power trans.....	8	12	2
Light trans.....	8	12	4
Oil switch bank	4	8	2
Low tens. swbd.	4	7	2
Bus bars installed and connected.....	4	7	3
Bells installed and connected:			
Low tension.....			
High tension.....			
Electrical work:			
Started.....	7	12	4
Completed.....			4

Miraflores—14.			
	During month.	To date.	
Installed:			
Power transformers.....		1	1
Light transformers.....			
Oil switch bank.....			
Low tension switchboard.....		1	1
Bus bars installed and connected.....			
Bells installed and connected:			
Low tension.....			
High tension.....			
Electrical work:			
Started.....		2	2
Completed.....			

HYDROELECTRIC STATION.

The erection of the penstocks was completed at the end of the month, and concreting of the penstocks was commenced.

ELECTRICAL WORK—ATLANTIC LOCKS.

During the month, 9,779 feet of cable were pulled into the conduit system, the total amount pulled to June 1, being 313,639 feet. Tests were continued in connection with the towing locomotives; spillway gate and machine, miter forcing machine, rising stem valve machines, cylindrical valve machines, and miter gate moving machines; hydrostatic tests were also conducted and inspection made in connection with the three penstocks of the hydroelectric station.

ELECTRICAL WORK—PACIFIC LOCKS.

At Pedro Miguel, there were 11,881 feet of cable pulled into the conduit system during the month, the total amount pulled to June 1, being 106,169 feet. Tests were continued in connection with rising stem valve machines, auxiliary culvert valve machines, and cylindrical valve machines.

EMERGENCY DAMS.

Inspection was in progress in four localities in the United States, and 635 tons of material were accepted. At the end of the month, 14,778 tons had been fabricated and accepted. Approximately, 848 tons of material were delivered on the Isthmus during the month; 885 tons were erected. On May 31, a total of 9,324 tons had been delivered, and 7,267 tons erected. Work was in progress on the east and west dams at Gatun and Pedro Miguel, and the east dam at Miraflores. The first part of the tests, consisting of three complete operations, was begun on May 19. The first test was performed in the following time:

	Time.	
	Mins.	Secs.
Drawing wedges	.....	20
Turning the dam across the lock chamber	2	25
Driving the wedges	.....	20
Lowering all wicket girders	5	.....
Lowering all gates	45	20
Raising all wicket girders and gates	68	30
Drawing wedges	.....	20
Turning dam to position when at rest	2	20
Driving wedges	.....	21

The other two complete operations required in the first part of the final tests were made, during which operations minor adjustments were necessary. The second part of the tests is not yet finished.

AIDS TO NAVIGATION.

Work was in progress erecting four range targets, setting 4th order range lenses in towers Nos. 1 and 2, Pacific end, and making the necessary surveys and reconnaissances in Gatun Lake in connection with the construction of range towers, reference targets, and beacons.

Second Division—Office of the Chief Engineer.

SHOPS.

Studies and plans for the various buildings, machine foundations, motorizing of machines, and illumination system were advanced during the month. Orders were made for all of the piping above ground for all of the shops; for structural steel framework of the sand house, and for supporting the shafting of the machine shop tool room; for material for the roof drainage system of the car shop, planing mill, and lumber and equipment shed; for the gravel stop on the roof and roofing

material of the pattern storage building, and for pipe railing around the stairs of that building.

Awards were made to the General Electric Company for five reversing motor planer equipments and twenty cloth pinions; the Thomas W. Pangborn Company for sand-blast equipment; the Niles-Bement-Pond Company for three 60-ton overhead cranes, and to the Cleveland Crane and Engineering Company for two 25-ton and two 20-ton overhead cranes. Specifications were prepared and requisition made for one annealing furnace, one core oven, one mold oven, and three small core ovens, and for trolley wire, insulators, and strain insulators for all crane runways.

Excavation for shop foundations amounted to 2,640 cubic yards, and for the pipe and electric conductor tunnel to 270 cubic yards; filling on the site of the shops and yard to 44,194 cubic yards. Pile driving for the foundations was completed on May 31. Twelve hundred and eighty-four cubic yards of concrete were placed in foundations, and 533 cubic yards in the tunnel, 413 linear feet of which were constructed during the month.

Four hundred and forty-five tons of structural steel were erected in shop buildings, making the total at the end of the month 484 tons, or 8.4 per cent of the whole. Steel for the planing mill is 73 per cent erected, foundry 25 per cent, and pattern storage shed 10 per cent.

DRY DOCKS.

Studies were made during the month for the granite work required in connection with the miter gate and caisson seat of dock No. 1, and for the caisson seats of dock No. 2, with the end in view of obtaining information as to the comparative cost of granite brought from the United States and that quarried on the Isthmus. Studies are in progress on the structure to carry the pressure of the floating caisson of dry dock No. 1, and on the general pumping and drainage system for both docks. The type of valve to be used in controlling the flooding culverts has been decided upon, and plans for the valves and valve operating machinery are in progress. Excavation for the dry dock amounted to 39,230 cubic yards.

TERMINAL WHARVES AND PIERS.

Plans for two sections of the quay wall, pier No. 1, and the small boat landing were advanced. Excavation for the quay wall amounted to 6,686 cubic yards, and for pier No. 1 to 1,605 cubic yards. Thirty-one caissons were sunk to rock for the foundations, the total penetration being 1,875 feet; the amount of concrete used as filler for the caissons was 1,351 cubic yards.

Fifth Division—Office of the Chief Engineer

DISTRICT NO. 1—LOCKS, DAMS, AND DRY EXCAVATION.

Excavation—The total excavation amounted to 264,919 cubic yards, of which 183,383 cubic yards were classified as rock and 81,536 cubic yards as earth.

Filling and embankment—Dry filling in the prism of the west dam at Pedro Miguel was increased by 100 cubic yards, the total amount of material used for this purpose being 692,978 cubic yards. The backfill at Pedro Miguel was increased by 31,987 cubic yards, the total quantity in place at the close of the month being 994,788 cubic yards. At Miraflores,

the dry filling in the toes of the west dam was increased by 12,570 cubic yards, making the total quantities of dry and hydraulic filling in place at the close of the month 1,648,199 cubic yards and 661,048 cubic yards, respectively. The backfill at Miraflores was increased by 90,404 cubic yards, the total quantity in place on May 31 being 1,562,605 cubic yards.

Pedro Miguel Locks—Concrete work consisted of the construction of the reinforced concrete base for the north guide wall buffer, lamp post bases, and miscellaneous finishing work. Installation of buffer springs and buffer timbers on the guide and wing walls was in progress. The erection of forms for the construction of the control house was started. Fixed irons aggregating 128,751 pounds were placed in the masonry. The total amount of concrete laid was 1,135 cubic yards.

OPERATION OF THE AUXILIARY CONCRETE CONSTRUCTION PLANT AT PEDRO MIGUEL.	
Length of working day (hours)	8.00
Average number of hours per day worked laying concrete, actual working time	4.52
Average number of mixers per day	1.08
Average hourly output per mixer, actual working time (cubic yards)	8.94
Concrete laid (cubic yards)	1,135.00

Auxiliary plant consisted of a daily average of 1.08 3-cubic yard mixers. One hundred and twenty-five cubic yards of concrete were mixed by hand.

Miraflores Locks—Concrete work in the Miraflores locks proper was completed on May 17, on which date the southwest wing wall was brought to grade. Other concrete work consisted of miscellaneous finishing work for operating tunnels, intake bridges, emergency dam quadrants, stairway parapets, and towing and return tracks. Fixed irons aggregating 386,880 pounds were placed in the masonry.

The excavation for the spillway dam was completed during the month.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	8.00	8.00
Average number of hours per day worked laying concrete, actual working time	2.60	7.27
Average number of mixers per day	5.23	3.04
Average hourly output per mixer, actual working time (cubic yards)	40.79	19.03
Average amount of concrete laid per hour per berm or chamber crane, actual working time (cubic yards)	54.42	.....
Total concrete laid (cubic yards)	2,830.00	20,848.00

Permanent plant consisted of a daily average of 1.65 berm cranes and 19 chamber cranes. Auxiliary mixing plant consisted of a daily average of 1.54 1-cubic yard and 1.5 3-cubic yard mixers, which discharged 10,243 cubic yards of concrete directly into forms. Permanent mixing plant consisted of a daily average of 3.3 2-cubic yard mixers. Locomotive cranes and derricks, placing concrete, averaged 2.65 units per day.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

Reservoirs, water mains, sewers, roads, and oil pipe lines were maintained and extended, as required, to facilitate construction work.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.	
Length of working day (hours)	8.00
Average number of hours per day, actual working time	6.11
Average number of cubic yards crushed per hour per working day	180.58
Average number of cubic yards crushed per working hour	266.13
Total output for the month (cubic yards)	29,274.00

Sixth Division Office of the Chief Engineer.

PACIFIC END.

Seven dredges were engaged in channel and inner harbor excavation at Balboa, removing

316,103 cubic yards of earth and 53,600 cubic yards of rock from the Canal prism, and 194,510 cubic yards of earth from the inner harbor and turning basin, a total of 564,213 cubic yards. At the close of the month, there remained to be removed from the Canal prism 3,632,087 cubic yards. The French ladder dredge *Gopher*, engaged in sand excavation at Punta Chamé during the entire month, removed 24,910 cubic yards.

ATLANTIC END.

Eight dredges were in operation during the month, removing 563,173 cubic yards of earth and 121,990 cubic yards of rock from the Canal prism, and 272,726 cubic yards of earth from the French canal at Mindi, a total of 957,889 cubic yards. On May 31, there remained to be excavated 2,279,598 cubic yards. The drill barge *Terrier* drilled 6,355 feet of rock, used 41,600 pounds of powder, and shot 33,790 cubic yards of material. On May 31st, 40 feet of water could be carried from zero to zero plus 2,100 feet, 35 feet to mile post 6 plus 2,200 feet, 30 feet to mile post 6 plus 2,250 feet, 20 feet to mile post 6 plus 2,300 feet, and 10 feet to mile post 6 plus 2,800 feet.

Atlantic Division.

GATUN LOCKS.

Excavation—Out of a total of 27,159 cubic yards of rock and earth excavated during the month, 4,720 cubic yards of earth were dug from the north forebay, and the remainder was borrow pit excavation for locks backfill.

Backfill—During the month there were 27,986 cubic yards of backfilling placed. On May 31, the backfill was 94.06 per cent completed.

Receiving and issuing material—The issues of rock amounted to 13,986 cubic yards. There were 6,507 cubic yards of sand issued. Cement receipts totaled 30,926½ barrels, and the issues amounted to 17,293¼ barrels.

Concrete work—A total of 12,377 cubic yards of concrete was laid distributed, as follows:

Upper locks, 468 cubic yards; lower locks, 11,909 cubic yards.

On May 31, the locks concrete work was 99.65 per cent completed.

OPERATION OF CONCRETE CONSTRUCTION PLANT.

Length of working day (hours).....	8.00
Average number of hours per day worked, per strand of cableway, laying concrete, actual working time.....	1.93
Average number of mixers per day.....	2.00
Average hourly output per mixer, actual working time (cubic yards).....	59.99
Average amount of concrete laid per hour, per strand of cableway, actual working time, (cubic yards).....	30 12
Concrete laid, (cu. yds.) cableways.....	12,216
Concrete laid (cu. yds.) portable mixers.....	287
Concrete laid (cu. yds.) hand mixed.....	321

Total amount of concrete laid (cu. yds.).... 12,824.00

GATUN DAM.

Construction during the month increased the total fill, as determined by car measurement, 108,477 cubic yards, making the total amount in place 21,677,554 cubic yards. On June 1, the dam was 98.5 per cent completed.

Dry fill—Additions to the dry fill amounted to 93,449 cubic yards, which were placed on the north and south toes of the dam, east and west of the spillway, making the total dry fill in place 11,478,811 cubic yards.

GATUN SPILLWAY.

Concrete—Concrete laid during the month amounted to 717 cubic yards, making the total in place 223,569 cubic yards. Concrete

work for the spillway was 97.6 per cent completed.

Hydroelectric plant—In preparing foundations, 500 cubic yards of rock were removed by hand and crane, making a total excavation of 98,590 cubic yards. Eight hundred and eighty-two cubic yards of concrete were placed, making a total of 3,612 cubic yards.

WEST BREAKWATER—COLON.

Out of a total of 19,772 cubic yards of Porto Bello rock placed on the breakwater, 7,995 cubic yards were unloaded by cranes and 11,777 cubic yards by derrick barges. The total amount placed upon the breakwater to June 1 was 229,214 cubic yards.

MUNICIPAL ENGINEERING.

The floor of the sedimentation basin for the Colon waterworks was completed and the east wall of the basin erected to a distance of 130 feet. The steel trusses supporting the roof of the pump station were erected and riveted. The installation of the new 20-inch main pipelines from Brazos Brook reservoir to the purification plant was continued, 3,400 linear feet of pipe being laid. This work was 90 per cent completed at the close of the month.

Central Division.

The total amount of material excavated during the month was 921,000 cubic yards, of which 354,061 cubic yards were classified as earth, and 566,939 cubic yards as rock. The entire amount was removed by steam-shovels, 896,600 cubic yards being classified as primary excavation, and 24,400 cubic yards as from ditch for draining Old Culebra dumps. Of the total primary excavation, 275,300 cubic yards were taken from within the lines of the Canal prism, and 621,300 cubic yards from without the Canal prism, the latter amount being excavated from slides, and from the high levels as a preventive against slides.

The daily average number of steamshovels at work was 40.54, and the number of shovel days was 1,054, as compared with 40.90 shovels at work, and 1,063½ shovel days in April. For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table is given:

Period	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W kg days.	Av. yards per shovel day.
		Rock.	Earth.			
1912: Cu. Yds.						
May.....	1,412,380	1,187,872	224,508	40.54	26	1,340.01
1913: Cu. Yds.						
May.....	921,000	566,939	354,061	40.54	26	873.00

Rainfall at Empire: 1912, 6.21 ins.; 1913, 11.74 ins.

The above table shows the average output per shovel to be 34.85 per cent less in May, 1913, than in the corresponding month of 1912.

The estimated amount of dry material removed and to be removed, according to the revision of February 1, 1913, is 111,751,472 cubic yards. Up to June 1, 1913, 106,306,772 cubic yards had been removed, leaving 5,444,700 cubic yards to be removed, in order to complete all dry excavation in this division. At the close of the month, 95.13 per cent of all dry excavation was completed. On May 31, the status of the work in the two sections which compose this division was as follows:

CULEBRA CUT. Cubic Yards.	
Dry excavation accomplished.....	93,922,117
Dry excavation to be accomplished.....	5,444,700
CHAGRES SECTION.	
Dry excavation completed.....	12,384,655
Wet excavation to be accomplished.....	300,000

Deliveries of 13,287 cubic yards of spoil were made to Quebrancha siding to be used in

reinforcing the Quebrancha and Brazos embankments of the relocated line of the Panama Railroad.

Material dumped from the Naos Island trestle during the month totaled 42,413 cubic yards.

The daily average number of laborers employed was 6,337, while the average number of gold men working was 625.

Quartermaster's Department.

Labor—The force report of May 21 showed 37,209 men actually working for the Commission and the Panama Railroad Company. The actual working forces of the several contractors totaled 4,533 men. The supply of unskilled labor was sufficient to meet all demands.

Buildings—Eight buildings were demolished. Fifteen buildings were completed; of this number, 11 are at Corozal, three at Balboa, and one at Ancon. At Pedro Miguel, one building was moved to a new site; five others were raised and moved to permit filling of the low ground.

Quarters—Employees' applications for married quarters are filed on two lists, applications of employees who entered the service prior to January 1, 1908 being placed on list No. 1; those of persons employed after that date being carried on list No. 2. On May 31, there were 22 names on the No. 1 list and 762 names on the No. 2 list.

Material and supplies—The value of material received was \$1,359,081.59. This material came forward in 40 steamers, the total weight of cargo, exclusive of lumber, piling, and ties, being 33,334 tons.

Subsistence Department.

The Hotel Tivoli showed a net profit of \$2,422.36. The operation of the line hotels, European laborers' messes, colored laborers' kitchens, restaurants, tugs, and dredges returned a net loss of \$396.89. The total net profit on subsistence operations during the month was \$2,025.47.

Department of Civil Administration.

COURTS.

During the month, five civil and one criminal case were disposed of in the Supreme Court, 68 civil and 42 criminal cases in the Circuit Courts, and 43 civil and 593 criminal cases in the District Courts.

POSTS, CUSTOMS, AND REVENUES.

Money order sales amounted to \$413,297.41, and the fees to \$1,980.46. Receipts from stamp and card sales, and from newspaper postage, aggregated \$8,557. The total collection of revenues was \$15,243.28, and the collection on account of court fines, costs, and fees \$2,857.55. A total of \$152,987 was deposited in postal savings accounts, and a total of \$147,512 was withdrawn. At the port of Ancon, 20 vessels entered and 21 cleared; at the port of Cristobal, 22 entered and 21 cleared.

POLICE AND PRISONS.

The total number of persons arrested was 588, of whom 523 were men, and 65 women. Thirteen convicts were committed to the penitentiary and five were discharged, leaving 128 convicts in confinement at the close of the month. The cost of guarding and subsisting these prisoners was \$2,238.55, and the value of the work performed by them on the roads of the Canal Zone was \$2,065.70.

FIRE PROTECTION.

Seven fires were reported in the Canal Zone.

The total damage occasioned by these fires was \$265.

PUBLIC WORKS.

In the city of Panama the daily average consumption of water was 1,597,161 gallons and in Colon 962,300 gallons.

SCHOOLS.

The net enrollment in the whiteschools was 1,364, the average number of pupils belonging was 1,058.9, and the average daily attendance 998.5. In the colored schools the net enrollment was 1,568, the average number belonging was 921.5, and the average attendance, 736.3. At the close of the month, there were employed in the white schools 47 teachers, and in the colored schools 32 teachers, the total being one greater than at the close of the preceding month.

Department of Sanitation.

The total number of deaths from all causes among employes was 38, divided, as follows: From disease 27, and from violence 11, giving an annual average per thousand of 5.42 and 2.21, respectively. The annual death rate per thousand among employes for the month of May, 1912, was 8.01.

The annual average death rate per thousand in the Canal Zone, and in the cities of Panama and Colon, including both employes and non-employes, was 19.66. This rate is based upon a population in the Canal Zone of 62,810, according to the census of February, 1912, and populations in Panama and Colon, respectively, of 47,172 and 20,232, as estimated by the Department of Sanitation. The annual average death rate per thousand among the same classes of population for the month of May, 1912, was 19.01.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was; Whites 3.65; blacks 5.92, giving a general average for disease of 5.42. For the same month during 1911, the annual average death rate per thousand from disease among whites was 5.81; blacks 8.97, giving a general average of 8.17; and for the same month during 1912, whites 1.95; blacks 5.50, giving a general average of 4.61.

Among employes, deaths from the principal diseases were: Dysentery, one; hæmoglobinuric fever, one; lobar pneumonia, five; organic disease of the heart, three; tuberculosis of the lungs, one; typhoid fever, two, leaving 14 deaths from all other diseases and 11 deaths from external violence. No case of yellow fever, smallpox, or plague originated on, or was brought to the Isthmus during the month.

Respectfully,

H. F. HODGES,

Acting Chairman and Chief Engineer.

Break in West India and Panama Cable.

The service of the West India and Panama Cable Company has been interrupted for the past six weeks, due to a break in its cable between the Isthmus and Jamaica, about 150 miles out from Colon. The company's cable ship *Henry Holmes* has been engaged in recovering the broken ends since Monday, June 2, but progress has been slow, owing to the depth of water where the trouble occurred. There is a narrow, but deep valley in the ocean at this point, and when the cable was first laid it was necessary to span this valley. When it parted recently, the ends sunk,

making it necessary to grapple for them in deep water. The work of grappling has to be conducted with care, for, when the broken sections are brought to the surface, it must be done as near the ends as possible, in order to avoid another break, and the consequent loss of a length of the cable. The cost of the cable was approximately \$2,500 a mile.

Small Accident at Miraflores Locks.

When the forces of the gate contractors began removing the wedge supports of one of the 81-foot leaves in the lower gate of the east chamber of the upper lock at Miraflores, on Saturday, June 21, for the purpose of swinging it, one of the anchor arms was found to have been left partly exposed on account of certain work in connection with the control house. This was not noticed at the time, as the place was hidden by the bridge and tracks used by the gate contractors. The anchor being jointed offered no resistance, thus permitting the yoke casting to move, and the gate to sag slightly at the outer end. The occurrence gave rise to a number of rumors, spread by visitors, who happened to be in the vicinity at the time. No damage was caused to the lock wall, and the leaf will be returned to its former position without difficulty.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry for the three weeks ending June 7, 14, and 21, respectively:

DATE.	Cubic yards.	Hours worked
June 2.....	2,614	7.10
June 3.....	2,379	6.25
June 4.....	2,006	5.50
June 5.....	1,275	2.40
June 6.....	.....	.....
June 7.....	.....	.....
Total.....	8,274	22.05
June 9.....	.....	.....
June 10.....	2,239	7.45
June 11.....	2,446	6.55
June 12.....	2,154	7.15
June 13.....	2,442	7.35
June 14.....	2,463	6.30
Total.....	11,744	36.00
June 16.....	2,195	7.20
June 17.....	2,494	6.30
June 18.....	2,134	7.15
June 19.....	4,069	10.50
June 20.....	3,117	10.00
June 21.....	3,294	7.40
Total.....	17,303	52.35

Fatal Railroad Accidents.

Frederick A. Phillips, a Barbadian laborer, employed by the McClintic-Marshall Construct Company, living at Las Cascadas, was struck and killed by I. C. C. engine No. 203, northbound, as he stepped from the southbound track to avoid a passing labor train, at 5.15 p. m., on Wednesday, June 18.

Margarita Dixon, a colored Panamanian woman, living at Paraiso, was struck by an I. C. C. labor train in the Paraiso yards at 5.25 p. m., on Thursday, June 12, receiving fatal injuries. The train crews were exonerated by the coroner's juries in both cases.

Palms have been planted in the garden of the Hotel Washington, and the grass plots on the Colon side of the garden have been bordered with hedges of coleas and crotons. The present plans for the garden provide for two tennis courts on Second street.

PREPARING FOR LAKE RISE.

Dates Set for Dismantling Buildings in Area to be Inundated.

There were still standing at Gorgona on June 1, twenty-nine American type quarters, 107 old French houses, and 88 miscellaneous buildings, the latter class including the clubhouse, police station, schoolhouse, shop buildings, etc. All of the American buildings of any value are to be removed by September 1. The material in the old French buildings that can be used to advantage in the construction of quarters elsewhere will be saved, and authority has been granted to sell such other of the French buildings as may be deemed advisable, the price to be set by the surveying officer.

No definite arrangements have as yet been made concerning the removal of the privately owned buildings at Gorgona, Matachin, Miraflores and Pedro Miguel.

There are only a few buildings in the Bas Obispo district that will be flooded, the top of the rail at the railroad station being at 84.5 feet above sealevel. Practically all of the American buildings in this settlement, with the exception of hotel, commissary, and quartermaster's storehouse, are on the hill.

There are a few houses on the west side of the Panama railroad at Pedro Miguel, including the commissary, quartermaster's storehouse and office, and corral, which are below the 55-foot contour, and outside of the area to be filled in. These will be vacated and dismantled by October 1.

All laborers' barracks within the flooded area in the Miraflores district are to be vacated by September 1. Communication with the cement shed on the west side of the Canal and the quartermaster's storehouse at Cocoli will probably be cut off by September 1. These buildings will be torn down before that date.

The Chief Quartermaster is of the opinion that surplus laborers' barracks, silver quarters, and gold quarters can be utilized as married quarters for silver men to provide for any force of laborers that may be required at the Pacific terminus after the Canal is opened. He has recommended the use of the material from the old buildings in the construction of the married quarters for silver laborers at the new colored settlement, near Balboa, and the recommendation has been approved.

Examinations by Board of Local Inspectors.

The Board of Local Inspectors will conduct examinations at the Administration Building, Ancon, on Wednesday, July 2, 1913, beginning promptly at 2 p. m., for persons desiring to procure the following classes of licenses: Pilots, masters, mates, marine engineers, chauffeurs and navigators of motor boats. All applicants for licenses must procure from the Executive Office, Ancon, forms for application and information respecting the filling out of same, not later than the day previous to the examination. Applicants for chauffeurs' licenses must also bring automobiles with them.

Knight of Pythias.

All Isthmian friends and members of the Knights of Pythias on the Isthmus are invited to attend funeral services of the late Thomas J. Myers to be held in Ancon chapel, at 3 p. m., Sunday, June 29. Knights of Pythias will assemble in Ancon hall at 2.15 p. m.

SOCIAL LIFE OF THE ZONE.

"Bunker Hill" Tea.

The program given at the "Bunker Hill" tea held by the Ancon Study Club at Ancon hall on Tuesday, June 17 was, as follows: Piano selections, Mrs. Madler and Miss Whitney; recitation, Mrs. Ewing; vocal solo, Miss McDonald; reading, "Paul Revere's ride," Malcolm Holt of the Ancon public school; historical sketch of the Old North Church, Mrs. Luce; vocal solo, Mrs. Keyser. The hall was decorated with flags and a variety of cut flowers, contributed from Ancon Hospital gardens. The pictures exhibited were arranged against a background of dark red velvet curtains. A "Bunker Hill" cake, donated by one of the members, bearing the decorations of a flag and the date, "1776," was raffled at the close of the entertainment. The club meeting for June 19 was omitted, and the next meeting will be held at house No. 31 on Thursday, June 26.

Mrs. Harrison's School.

Mrs. W. S. Harrison's school for little children, which has been conducted in the Cristobal Union Church since last October, will close on Friday, June 27. In addition to the kindergarten preparatory work for the first grade, Mrs. Harrison has employed the Montessori system, of which she has the first-year equipment. The school will reopen in October, and the Montessori system will be made a special feature for the teaching of the children from three to five years old.

Church Notes.

The new parish hall for the Church of the Immaculate Conception, Colon, is nearly completed. The roof is on, and the images of St. Joseph and the Virgin Mary have been placed in the arched niches over the two entrances. The parish school will occupy the lower story of the building, and the upper story will be devoted to the use of the Knights of Columbus.

The members of the Chinese class in connection with the Union Church, Cristobal, have been drilling in military tactics under Mr. Leander Larson, a member of the executive committee of the church. The young men have become very proficient in their work, and have ordered guns and uniforms for the company.

The subject of the sermon at the evening service in the Cristobal Union church on Sunday, June 22, was "Defending the home; legitimate and illegitimate methods."

Receipts from Selfdenial Week.

The collections from the Isthmian branches of the Salvation Army for the annual self-denial week, in May, amounted to \$1,260, being the largest sum that has ever been collected on the Isthmus. The offering from Jamaica was \$1,200; from Barbados and Demerara, \$1,250, and from Trinidad, \$400. There are nine sections in the entire division.

The project of erecting a hall and quarters for officers in New Gatun is being held in abeyance, pending the decision on the site for the permanent native village at that place.

Lodge Notes.

Isthmian Canal Rebekah Lodge, No. 1, Independent Order of Odd Fellows, has been transferred from Gorgona to Empire, where meetings will be held in the lodge hall on the

second and fourth Fridays in each month, at 7.30 p. m. The first meeting of the lodge in Empire will be on Saturday evening, June 28, at 8.30 o'clock. All visiting Rebekahs in good standing have been invited.

The Pythian Sisters of Las Cascadas held an election and installation of officers in the lodge hall on Thursday, June 19.

Odd Fellow Memorial Services.

The annual memorial service of Canal Zone Lodge, No. 3, Independent Order of Odd Fellows, will be held at the I. C. C. chapel at Empire, on Sunday, June 29, at 7.30 p. m. The following program has been arranged:

1. Prelude—*Adoration*.....Gaul.
2. Opening hymn—*All hail the power of Jesus' name*.....Holden.
3. Baritone solo—*One sweetly solemn thought*. Ambrose.
4. Remarks in memory of the members who have died.
5. Invocation, closing with recital of the Lord's Prayer in unison.
6. Male quartet—*Nearer my home*.....Bilhorn.
Messrs. Dohrmann, Mulherr, Skinner, and Conner.
7. Scripture lesson.
8. Hymn—*Lead, kindly light*.....Dykes.
9. Offertory and voluntary.
10. Tenor and alto duet—*Redeemed*.....Towner.
Mrs. J. L. Wise and Mr. Dohrmann.
11. Sermon.
12. Male quartet—*The wayside cross*.....Palmer.
13. Hymn—*Onward, Christian soldiers*.....Sullivan.

Mrs. Julius F. Storing will assist as organist, and Mr. H. W. Dohrmann, as musical director. An invitation has been extended to all Odd Fellows, and their friends, to attend the service.

High School Commencement.

The third annual commencement exercises of the Canal Zone high school will be held in the Commission clubhouse, Empire, on Friday evening, June 27. The arrangements are under the direction of the high school faculty, and junior class. Following the program, which will occupy about one hour and a quarter, the junior class, assisted by the under classes, will hold a reception in honor of the seniors. The clubhouse will be decorated in black and gold, the high school colors; and in green and gold, the colors of the senior class. During the evening, music will be furnished by the Tenth Infantry orchestra. A special train for the accommodation of those wishing to attend the commencement will leave Colon at 6 p. m., stopping at Gatun, Gorgona, Bas Obispo, and Las Cascadas, arriving at Empire at about 7.40. Returning, the train will leave Empire at 10.15.

The program will be, as follows:

1. Overture.....Orchestra.
2. Song—*Greetings*.....Franz Abt.
High school chorus, assisted by Empire Choral Club.
3. Salutatory.....Corrine Browning.
4. Piano solo.....Arthur Howard.
5. Class poem.....Helen Calkins.
6. Song—*Ship of State*.....Words by Longfellow
High school chorus, assisted by Empire Choral Club.
7. Debate—"Resolved, that California has the right to pass laws restricting the acquisition of land by aliens."
Fred Barber and Emmanuel Perry.
8. Selection.....Orchestra.
9. Contralto solo.....Adeline Babbitt.
10. Valedictory.....Emma Stubner.
11. Selection—*Il Trovatore*.....Verdi.
High school chorus, assisted by Empire Choral Club.
12. Presentation of diplomas.....Frank A. Gause.
13. Selection.....Orchestra.

Farewell Celebration of West Indians at Gorgona.

The West Indian population of the native town at Gorgona is preparing for a farewell celebration to be held on July 4. An interesting program is being arranged. The athletic events and other pastimes, including races and dancing, will take place on the vacant lot

adjoining the baseball park. Music will be furnished throughout the day by a band from New Gatun.

Gorgona Catholic Club Disbands.

At the June meeting of the Gorgona Catholic Club, held Thursday, June 19, it was decided to disband on account of the removal from Gorgona of the majority of its members. The club was organized in 1907, and at one time had a membership of 85 men.

PERSONAL.

Six members of the House of Representatives arrived on the *Panama*, on Thursday, June 19, on a visit to the Canal. The party consists of William B. Francis, Mrs. Francis, and two daughters, Ohio; Eugene E. Reed, and son, New Hampshire; P. G. Ten Eyck, Mrs. Ten Eyck, and son, New York; J. B. Thompson, Mrs. Thompson, and two sons, Oklahoma; William E. Williams, and Mrs. Williams, and Charles M. Borchers, Illinois.

Col. William C. Gorgas, accompanied by Mrs. Gorgas, returned to the Isthmus on the *Panama*, which arrived at Cristobal on Thursday, June 19.

Mr. J. A. LePrince, accompanied by his family, returned from his annual leave on the *Panama*, on Thursday, June 19.

Obituary.

The death of Dr. Facundo Mutis Durán occurred on Friday, June 20, at Ancon Hospital. He was born in 1852, in the department of Santander, Colombia, and was graduated from the College of Bogotá, with the degree of LL. D., in 1874. From 1880 to 1904, he was closely identified with the affairs of Colombia, and of the State of Panama; and was twice governor of Panama. He was a delegate to the conference held in Washington, in 1902, to discuss the Treaty for an interoceanic canal, and, in 1904, was made a commissioner for the compilation of the Codes of the Republic of Panama. On June 1, 1905, he was appointed the first Chief Justice of the Supreme Court of the Canal Zone, continuing in the office until the expiration of his term on January 4, 1909. He afterward retired to private life, but during the presidential term of Dr. Pablo Arosemena, he served as a justice of the Supreme Court of Panama until the enactment of a law establishing citizenship as a qualification for the office. He is survived by his wife, Mrs. Lotta Durán, who resides in Panama city.

William Joseph Allen, an American, employed in the Atlantic Division, died at Colon Hospital, on Tuesday, June 17. He was 53 years of age, formerly lived at Eddyville, Iowa, and had been on the Isthmus since November 22, 1907. He is survived by his wife, residing at Gatun.

Joseph Gallagher, an American, employed as a fireman on the *U. S. S. Hannibal*, died at Colon Hospital, on Tuesday, June 17. He was 32 years of age, unmarried, and had been on the Isthmus 10 days. His brother, Michael Gallagher, lives at Kingston, N. Y.

With the approval of the Secretary of War, the death sentence of Francisco Zaldivar, a Panamanian convicted of murder in the Canal Zone, and sentenced to be executed on July 11, 1913, has been commuted to life imprisonment.

OFFICIAL CIRCULARS.

Closing of Planing Mill and Carpenter Shop at Gorgona.

CULEBRA, C. Z., June 18, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

The planing mill and carpenter shop at Gorgona will be closed on July 7, 1913, and during the week beginning on that date, the machinery, tools, templates, material, and so forth, will be transferred to and installed in the planing mill of the permanent shops at Balboa. It is not expected that the Mechanical Division will be able to do planing-mill and carpenter work during the week ending July 12, 1913.

Heads of departments and divisions should arrange to have all planing-mill and carpenter work, for which they are dependent upon the Mechanical Division, and which they will require before the middle of July, completed prior to July 5, 1913.

Work requests upon the Mechanical Division requiring planing-mill and carpenter work will continue to be made on the headquarters of the Mechanical Division at Gorgona until further notice.

H. F. HODGES,

Acting Chairman, Isthmian Canal Commission.
Second Vice-President, Panama Railroad Company.

Repairs to Lidgerwood Flat Cars and Steel Dump Cars.

CULEBRA, C. Z., June 19, 1913.

CIRCULAR No. 349-D:

Construction work is considered to have reached the stage that will enable Lidgerwood flat cars and steel dump cars that would require extensive repairs to put them in serviceable condition to be retired.

Before extensive repairs are commenced on any Lidgerwood flat car or steel dump car, the superintendent of the Mechanical Division will inform the head of department or division concerned of the condition of the car and of the estimated cost of repairing it, and will recommend that the car be surveyed and condemned and that the car be stripped if any of the parts are required or can be used for repairing other cars.

The head of department or division should request the survey and condemnation of cars recommended by the superintendent of the Mechanical Division if such action will not decrease the desired rate of prosecution of construction work. Before disapproving the recommendation of the superintendent of the Mechanical Division that a bad-order car be surveyed and condemned on account of interference with the construction work, it should be ascertained from the inspector of shops whether or not cars can be obtained from other departments and divisions.

The stripping of a sufficient number of cars that are surveyed and condemned to provide necessary spare parts will be authorized when recommended on survey request.

H. F. HODGES,

Acting Chairman and Chief Engineer.

Charges for Electric Power.

CULEBRA, C. Z., June 19, 1913.

CIRCULAR No. 336-F:

Effective July 1, until further notice, the charges for electric power furnished by the Mechanical Division to all departments and divisions, including the Panama Railroad Company, the United States Army, the United States Navy, the United States Marine Corps, and the Santo Tomas Hospital will be, as follows:

Item.	Per month.	Per kilo-watt hr.
Each 16-candle power lamp, or equivalent, with lamp renewals..	\$.30	
Each arc lamp.....	5.00	
Lighting, on meter basis, with lamp renewals.....		.04
Lighting, on meter basis, without lamp renewals.....		.02½
Each 15-horsepower motor, without meter.....	50.00	
Each 10-horsepower motor, without meter.....	30.00	
Each 5-horsepower motor, without meter.....	15.00	

These rates do not apply to nor change the existing charges for electric power furnished for private consumption.

The rates fixed by Circular No. 336-A, dated December 30, 1910, and by Circular No. 336-B, dated April 28, 1911, are revoked. H. F. HODGES,
Acting Chairman and Chief Engineer.

Acting Superintendent of Public Works.

ANCON, C. Z., June 16, 1913.

HEAD OF DEPARTMENT OF CIVIL ADMINISTRATION:

CIRCULAR No. 112:

Mr. J. J. Reidy is designated Acting Superintendent

of Public Works, effective today, vice Mr. M. E. Gilmore, resigned.

H. F. HODGES,
Acting Chairman.

Passing Loaded Work Trains.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., June 18, 1913.

G. S. BULLETIN No. 4.

G. S. Bulletin No. 3, dated June 16, in regard to Panama railroad trains, when passing I. C. C. work trains loaded with rock, on double track, coming to full stop until after I. C. C. trains had passed, is hereby cancelled.

J. D. PATTERSON,
General Superintendent.

Fourth of July Train Service.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., June 17, 1913.

CIRCULAR No. 110:
TO ALL CONCERNED:

On July 4, 1913, passenger trains will be run on the regular published Sunday and holiday schedule, with the following additions thereto:

A special train will leave the Panama passenger station at 7 a. m., making stops at Corozal, Miraflores, Pedro Miguel, and Gatun, arriving at Colon 8.30 a. m. This train will be run over the Gold Hill line.

A special train to take care of the enlisted men of the Tenth Infantry, at Las Cascadas, and the Marines, at Bas Obispo, will leave Las Cascadas at 7 a. m., and Bas Obispo, at 7.05 a. m., arriving at Colon 8.15 a. m. This train will make no other stops, and will not carry any one, except Marines and enlisted men from the Tenth Infantry.

Returning, the Marines and Tenth Infantry special train will leave Cristobal on track opposite commissary, at 6 p. m., making stops only at Bas Obispo and Las Cascadas, and carry Marines and enlisted men from the Tenth Infantry only.

A special train will leave Colon passenger station at 9.30 p. m., making all stops.

A special train will also leave Colon passenger station at 1 a. m., July 5, making all stops.

The shuttle train service between Colon and Gatun will be operated on the following schedule, making stops at New Gatun, Mindi, and Mount Hope:

Leave Colon 7.30 a. m., arrive Gatun 7.50 a. m.
Leave Gatun 8 a. m., arrive Colon 8.20 a. m.
Leave Colon 11 a. m., arrive Gatun 11.20 a. m.
Leave Gatun 1.30 p. m., arrive Colon 1.50 p. m.
Leave Colon 9.15 p. m., arrive Gatun 9.35 p. m.
Leave Gatun 10 p. m., arrive Colon 10.20 p. m.

J. D. PATTERSON,
General Superintendent.

Acting Local Auditor, P. R. R.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., June 18, 1913.

CIRCULAR No. 114:

TO ALL CONCERNED:

During the absence of Mr. R. W. Hart, local auditor, on leave, Mr. M. L. Duff is appointed acting local auditor, effective Wednesday, June 18, 1913.

JOHN D. PATTERSON,
General Superintendent.

Notice to Mariners.

PANAMA RAILROAD COMPANY,
OFFICE OF PORT CAPTAIN,
COLON, R. P., June 23, 1913.

The notice to mariners, dated June 1, 1913, is hereby cancelled.

Under date of June 21, the commander of the cable steamer *Henry Holmes* advises that he has placed two cable buoys in the following positions:

1 buoy, Lat. 12° 06' 05" N. Long. 78° 43' 42" W.
1 buoy, Lat. 12° 11' 45" N. Long. 78° 40' 22" W.

These buoys are down in 2,000 fathoms, and are in the track of vessels plying between Colon and Jamaica.

J. Sr. C. HUNT,
Port Captain.

Sale of Towboat "Exotic."

OFFICE OF DEPOT QUARTERMASTER,
MOUNT HOPE, C. Z.,
June 21, 1913.

Sealed bids will be received at this office until 2 p. m., Tuesday, September 2, 1913, for the steel-hull, stern-wheel towboat *Exotic*, built for the Commission in 1908 by Pusey and Jones, Wilmington, Del., at an approximate cost of \$40,000.

Gross tonnage, 150; two tandem compound engines, 7-inch by 14-inch, 48-inch stroke; two horizontal

tubular boilers, Mississippi River type, 44-inches by 190-inches; indicated horsepower, 70; equipped with boiler feed pumps; boat equipped with capstan, steam steering gear, etc.; retired from service in 1911.

This boat can be inspected and further particulars obtained on any working day between 7 and 11 a. m., and 1 and 5 p. m., upon application at this office; any further information desired by intending bidders at a distance will be furnished by letter on request. Right, s reserved to reject any or all bids.

Bids should be addressed to the Depot Quartermaster Mount Hope, Canal Zone, plainly marked, "Proposal to purchase towboat *Exotic*, to be opened September 2, 1913."

COURTLAND NIXON,
Depot Quartermaster.

Rainfall from June 1 to June 21, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	2.20	20	6.63
Balboa.....	2.70	20	5.86
*Miraflores.....	2.72	15	8.72
Pedro Miguel.....	1.42	14	8.42
Rio Grande.....	1.52	11	6.57
<i>Central Section—</i>			
Culebra.....	2.57	11	7.63
*Camacho.....	1.85	11	8.04
Empire.....	3.36	7	10.04
Gamboa.....	1.47	19	6.63
*Juan Mina.....	3.19	5	8.16
Alhajuela.....	2.71	11	8.22
*El Vigia.....	1.96	3	7.78
*Gorgona.....	2.10	20	8.27
*Frijoles.....	2.70	11	8.03
*Monte Lirio.....	2.38	11	9.36
<i>Atlantic Section—</i>			
Gatun.....	1.70	1	9.90
*Brazos Brook.....	2.03	11	10.57
Colon.....	2.05	11	9.90
Porto Bello.....	1.56	3-15	6.79

*Standard rain gage—readings at 5 p. m., daily—automatic rain gage at unstarred stations—values midnigh to midnigh. †To 5 p. m., June 20.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending July 5, 1913, (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
June 29.....		5.13	11.17	5.57	11.55
June 30.....		6.08	12.13	6.50	
July 1.....	12.53	7.04	1.08	7.41	
July 2.....	1.49	7.58	2.01	8.30	
July 3.....	2.40	8.50	2.52	9.18	
July 4.....	3.28	9.40	3.41	10.05	
July 5.....	4.15	10.28	4.28	10.52	

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnigh, Saturday, June 21, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela.	Gamboa.	Gatun Lake.
Sun., June 15.....	126.6	92.8	49.5	49.4
Mon., June 16.....	126.0	92.4	49.3	49.3
Tues., June 17.....	126.0	92.4	49.1	49.1
Wed., June 18.....	125.8	92.3	49.0	48.9
Thurs., June 19.....	126.4	92.6	48.7	48.7
Fri., June 20.....	128.0	93.2	48.6	48.5
Sat., June 21.....	128.0	93.9	48.7	48.5
Height of low water to nearest foot.....	125.0	91.0	44.0	

Married

HALLOWELL-JORDAN—On June 7, at the home of the bride's parents at Pedro Miguel, Ida May, daughter of W. B. Jordan to Mr. Cooper Hallowell, of Arkansas, the Rev. Harry Compton officiating. Canal Zone residence, Ancon.

DAVIES-BRENEA—At St. Joseph's Church, Colon, on Saturday, June 21, by the Rev. Father Pouget, assisted by the Rev. Father Fitzpatrick, Maria, daughter of Mr. and Mrs. Juan Brenea of Cartago, Costa Rica, to Mr. E. D. Davies, Canal Zone residence, Mount Hope.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The moving picture schedule for the week June 30 to July 5 is, as follows: Monday, Cristobal; Tuesday, Corozal; Wednesday, Empire; Thursday, Gatun; Friday, Gorgona and Porto Bello; Saturday, Culebra.

CULEBRA.

The personnel of the executive council has been increased by the appointment of Messrs. J. H. Smith, Jr., and H. G. Cornthwaite. Mr. H. O. Hostetter has resigned on account of his removal to Empire.

High scores in bigpins for the week are, as follows: Anderson, 201; Case, 220.

Twenty-four men are competing for the championship in a local handicap bowling tournament which will close this week.

An informal social for the grown-ups will take place on Friday, June 27, at 8 p. m. A program is being arranged and refreshments will be served. A special invitation is extended to the ladies, bachelors, and new arrivals.

All those interested in the formation of a current events discussion club, to meet during alternate weeks, are requested to hand their names to the secretary.

EMPIRE.

Entries have been closed for the ragtime and tenpin bowling tournament. Each man is to play two games with each other man.

Considerable interest is shown in the handicap pool tournament. The standing of the first three men is: Walcott won 9, lost 5; Shafer won 9, lost 4; Jacques won 7, lost 2.

The glee club meets every Wednesday night at 8 o'clock. A program will be given in the near future. Persons wishing to join the club are requested to attend the rehearsals.

GORGONA.

The Culebra volleyball team played at Gorgona on Friday evening, June 20. The score was 3 to 2 in favor of Culebra. The lineup was, as follows:

Gorgona—King, Gorce, Whipple, Ellington, Herring, and Kramer.

Culebra—Warner, Van Zandt, Becklem, Hoffman, Herrington, and Coppin.

Gorgona will arrange for another game soon. The regular gymnasium class will be held twice a week, and special training for the track will be offered to those who wish to train for the meet on the Fourth of July.

The standing in the head pin bowling tournament is, as follows:

Singles—Sims, high score, 100.

Doubles—Morrison and Stewart, 565; Trieber and Denst, 558; Sims and Denst, 549.

GATUN.

The married men's gymnasium class, which is held twice a week, continues to draw a good attendance. This class meets at 5.30 p. m., and new members will be welcomed.

Two evening gymnasium classes are held each week. Members who have taken work are pleased with the results.

The Spanish classes continue. The pupils in several of the classes have nearly completed the course and will be graduated soon.

CRISTOBAL.

On Friday night, a "smoker" was given to the members and their friends. The attendance was about 275. The main part of the program consisted of special moving picture films and music by the saxophone orchestra from Camp Elliott. Irish dialect sketches and songs were given by Master Richard Roberts, and Scotch songs by Mr. Archie Harper. Refreshments were served, and there was a liberal distribution of cigars.

The Cristobal indoor baseball team won the game played with the Gatun team by a score of 12 to 11. The teams were, lined up, as follows:

Gatun—Stevenson, first base; Roberts, second base; Wrights, shortstop; Walton, third base; Schad fielder; Watter, catcher; Duer, pitcher.

Cristobal—Levy, first base; Carpenter, fielder; Mathuse, pitcher; Russel, shortstop; D. Raymond, second base; A. Fraser, third base; MacSparran, catcher.

Moving pictures will be held on Saturday night, owing to a change in date with Gorgona.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission and Panama Railroad Company, arrived at the ports of Cristobal Colon, and Balboa, during the week ending June 21.

Advance, June 14, from New York, with 50 barrels castings, for Panama Railroad Company; 48 cases electrical material, 10 reels electric cable, 12 cases

castings, for First Division; 300 pieces coupler knuckles 80 casks ingot copper, 20 barrels castings, for Mechanical Division; 2,200 pieces hollow tile, 1,006 pieces steel plates, for Second Division; 74 pieces cast iron pipe, for Atlantic Division; 110 pieces cast iron pipe, for Fifth Division; 223 pieces structural steel, nine kegs rivets, for fortifications; 22 cases files, 36 drums calcium carbide, 510 kegs bolts and nuts, 48 cases picks, 250 kegs spikes, 30 cases brass valves, 36 cases rubber hose, 73 crates handles, 42 cases bronze screening, for stock; and a miscellaneous cargo, the whole consisting of 5,460 packages, weighing 650 tons.

Carrillo, June 15, from New York, with 88 pieces steel rails, for Second Division; 279 packages structural steel, for Panama Railroad Company; 646 packages structural steel, 25 barrels pipe-fittings, for fortifications; 150 cases toilet paper, 127 packages wheelbarrows, 1,081 sacks oats, 100 kegs paint, 30 cases hardware, for stock.

Prinz Joachim, June 15, from New York, with 73 packages angles and channels, 10 bundles steel bars, for stock; 32 bundles car springs, for Mechanical Division; 22 packages buoy parts, for Lighthouse Subdivision.

Nestorian, June 16, from Liverpool, with eight pieces dredge buckets, for Sixth Division; 410 barrels carboic acid, for stock.

Heredia, June 16, from New Orleans, with 13,619 pieces yellow pine lumber, 1,484 pieces cross-ties, 56 pieces piling, 427 bales straw, 34 crates library paste, for stock; 921 barrels paving brick, for Panama Railroad Company; 464 pieces yellow pine lumber, for Mechanical Division.

Tricolor, June 16, from Tacoma, with 2,234 pieces creosoted lumber, for First Division; 8 pieces spud timbers, for Atlantic Division; 15,974 pieces Douglas fir lumber, for stock.

Santa Marta, June 18, from New York, with 910 pieces structural steel, for Panama Railroad Company; 7 cases valve parts, for First Division; 124 coils wire rope, for emergency dams; 11 cases hardware, for stock.

Atenas, June 19, from New Orleans, with 356 bales straw, 8 barrels wire rope clamps, 19 cases sledges, 49 cases lavatories, for stock.

Lewis Luckenbach, June 20, from San Francisco, with 6 cases rubber hose, for stock.

Panama, June 19, from New York, with 13 cases fire brick, 132 pieces steel plates, for Second Division; 36 reels copper cable, 184 cases electrical material, 12 cases castings, for First Division; 9 cases dredging sleeves, for Sixth Division; 8 cases bumping posts, for Panama Railroad Company; 355 pieces castings, 42 bundles castings, 15 cases incandescent lamps, 13 barrels facing, for Mechanical Division; 38 cases drugs, for Sanitary Department; 300 kegs bolts and nuts, 150 cases soap, 20 cases aluminum, 500 kegs spikes, 519 pieces galvanized pipe, 16 pieces dipper teeth, 20 rolls cotton duck, 40 rolls galvanized wire, 20 cases varnish, 25 barrels pipe-fittings, 334 pieces steel plates and bars, 377 bundles galvanized sheets, 40 kegs washers, 86 coils lead pipe, 80 reels wire rope, 106 cases air brake material, for stock; 2,350 pieces pig iron, for Mechanical Division; and a miscellaneous cargo, the whole consisting of 6,200 packages, weighing 800 tons.

Misdirected Letters.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Bell, A. S.	Hass, Miss Lillian
Bennich, Frederick G. (2)	Hatten, Frank M.
Bennis, Elwin R.	Hinds, E. Garfield
Bill, A. S. (pkg.)	Kerri, B. A.
Bromfield, Daniel	Malloy, Mrs. J. E.
Brown, Miss Princess E.	Metzelaar, A. N. (2)
Caldwell, Jno. Layard	Mills, Edgar (pkg.)
Cardoza, W. H.	Mitchell, Jack
Conklin, Chas. T.	Molan, John H.
Cotter, Don	Peterson, John
Cotter, J. H. (2)	Ratliff, Dug
Crowell, D. J.	Sealey, William
Fleming, Dave G.	Shepard, Frank
Flynn, T. A.	Simons, A. W.
Ford, W.	Smith, J. E.
Fortson, Capt. E. P.	Skinner, Frank
Foy, Henry	Tarter, John E. W.
Garnier, Robert	Thompson, Thomas
Genzales, Maria	White, Hugh J. (3)
Gonzales, Rosa	

Cold Storage.

The following changes in the price list of cold storage provisions published in *The Canal Record* of June 11, are effective June 25:

Celery, per head, 11 cents; lettuce, per pound, 12 cents; squash, per pound, 7 cents; turnips, per pound, 4 cents; apples, per pound, 7 cents.

Roe shad, 75 cents each; shad roes, 40 cents per pair; cauliflower, 12 cents per pound; green peppers, 12 cents per pound; canteloupes, 12 cents each; and watermelons, 50 cents each, are articles placed on sale in the last week.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Allianca.....	P. R. R. Thursday....	June 19
Colon.....	P. R. R. Thursday....	June 26
Advance.....	P. R. R. Wednesday....	July 2
Panama.....	P. R. R. Tuesday....	July 8
Allianca.....	P. R. R. Monday....	July 14
Colon.....	P. R. R. Saturday....	July 19
Advance.....	P. R. R. Saturday....	July 26
Panama.....	P. R. R. Friday....	Aug. 1
Allianca.....	P. R. R. Thursday....	Aug. 7
Colon.....	P. R. R. Tuesday....	Aug. 12
Advance.....	P. R. R. Tuesday....	Aug. 19
Panama.....	P. R. R. Monday....	Aug. 25
Allianca.....	P. R. R. Saturday....	Aug. 30

CRISTOBAL TO NEW YORK.

Panama.....	P. R. R. Wednesday....	June 25
Allianca.....	P. R. R. Tuesday....	July 1
Colon.....	P. R. R. Tuesday....	July 8
Advance.....	P. R. R. Monday....	July 14
Panama.....	P. R. R. Sunday....	July 20
Allianca.....	P. R. R. Saturday....	July 26
Colon.....	P. R. R. Thursday....	July 31
Advance.....	P. R. R. Thursday....	Aug. 7
Panama.....	P. R. R. Wednesday....	Aug. 15
Allianca.....	P. R. R. Tuesday....	Aug. 19
Colon.....	P. R. R. Sunday....	Aug. 24
Advance.....	P. R. R. Sunday....	Aug. 31

NEW YORK TO COLON.

Metapan.....	U. F. C. Wednesday....	June 18
Thames.....	R. M. Saturday....	June 21
Tivives.....	U. F. C. Saturday....	June 21
Prinz August Wilhelm H.-A.....	Saturday....	June 21
Zacapa.....	U. F. C. Wednesday....	June 25
Emil L. Boas.....	H.-A. Saturday....	June 28
Sixaola.....	U. F. C. Saturday....	June 28
Almirante.....	U. F. C. Wednesday....	July 2
Prinz Joachim.....	H.-A. Saturday....	July 5
Carrillo.....	U. F. C. Saturday....	July 5
Trent.....	R. M. Saturday....	July 5
Santa Marta.....	U. F. C. Wednesday....	July 9
Carl Schurz.....	H.-A. Saturday....	July 12
Pastores.....	U. F. C. Saturday....	July 12

COLON TO NEW YORK.

Santa Marta.....	U. F. C. Thursday....	June 26
Pastores.....	U. F. C. Tuesday....	July 1
Carl Schurz.....	H.-A. Tuesday....	July 1
Metapan.....	U. F. C. Thursday....	July 3
Prinz August Wilhelm H.-A.....	Tuesday....	July 8
Tivives.....	U. F. C. Tuesday....	July 8
Magdalena.....	R. M. Tuesday....	July 8
Zacapa.....	U. F. C. Thursday....	July 10
Emil L. Boas.....	H.-A. Tuesday....	July 15
Sixaola.....	U. F. C. Tuesday....	July 15

NEW ORLEANS TO COLON.

Turrialba.....	U. F. C. Saturday....	June 21
Cartago.....	U. F. C. Wednesday....	June 25
Abangarez.....	U. F. C. Saturday....	June 28
Heredia.....	U. F. C. Wednesday....	July 2
Atenas.....	U. F. C. Saturday....	July 5
Parismina.....	U. F. C. Wednesday....	July 9

COLON TO NEW ORLEANS.

Atenas.....	U. F. C. Thursday....	June 26
Parismina.....	U. F. C. Saturday....	June 28
Turrialba.....	U. F. C. Thursday....	July 3
Cartago.....	U. F. C. Saturday....	July 5
Abangarez.....	U. F. C. Thursday....	July 10

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays at 3 p. m.; ships for New York via Kingston on Tuesdays at 1.30 p. m. and Thursdays at 1.30 p. m.; for Bocas del Toro on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m. and for Limon direct, Tuesdays at 3 p. m.

The following ships arrived at, or departed from, the port of Balboa, during the week ending June 21:

Arrivals—June 16, *Tricolor*, from Puget Sound; June 18, *Aysen*, from Valparaiso; June 20, *Luckenbach*, from San Francisco; June 20, *San José*, from San Francisco. Departures—June 16, *Ucayali*, to south; June 16, *Manari*, to intermediate ports; June 17, *Mexico*, to south; June 18, *U. S. S. Yorktown*, to Corinto, Nicaragua; June 20, *Ecuador*, to Guayaquil; June 21, *Chile*, to Buenaventura and Tumaco.

Lost—On train No. 28, leaving Panama at 7 p. m., on Sunday, June 22, mileage book No. 93054S. Finder is requested to notify T. B. Gardiner, Box 43, Paraiso, C. Z.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, JULY 2, 1913.

No. 45.

The Canal Record

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The Canal Record is published free of charge, one copy each to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Increased Facilities at Balboa Commissary.

An addition has been built at the rear of the Balboa commissary store to house the grocery department for "silver" employees. The building is 30 by 64 feet in plan, and one-story in height, with a ridge roof having a slope of one on two. A 64-foot counter extends along the west wall, and customers have access to it through windows from a 10-foot covered porch, without entering the building. Connection with the cold storage is made at the west side of wareroom over a covered platform. The space heretofore used for "silver" employees' groceries will be devoted to dry goods for them.

Following the increased activities around the Pacific terminus of the Canal, the sales at the Balboa commissary have been steadily increasing; for the month of May they amounted to \$59,745.57, an increase of 75 per cent over the sales for May, 1912. The force employed numbers 75 men and three women.

Lots on Cristobal Water Front.

There are four lots on the water front at Cristobal, situated between the fire station and the new docks, known as lots Nos. 1, 2, 3, and 4. Lots Nos. 1 and 2 have a frontage on Roosevelt avenue of 150 feet each, and a depth extending back from it of about 75 feet each. Lot No. 3 is irregular in size, having a frontage on the street of 150 feet, and a depth of 20 feet at one end, and 94 feet at the other, facing lot No. 5. The latter is also of irregular size, approximately 100 by 120 feet. Lots Nos. 1 and 2 are being filled in to bring them up to the street level, the other two lots having already been filled. About 6,000 cubic yards of material will be required, the cost of which will be borne by the Panama Railroad Company. This work has necessitated the removal of house No. 344, formerly standing on lot No. 1, to the plot of ground in Cristobal used until recently as a tennis court, the latter having been transferred to

a vacant space in the rear of the clubhouse.

Applications for the rent of lots Nos. 1 and 2 have been received and approved. The United Fruit Company plans to build an office on lot No. 1, and the Hamburg-American Line proposes to erect a two-story building for its use on lot No. 2. All of these lots will be in charge of the land department of the Panama railroad.

Permanent Cement Storage.

A committee, consisting of Lieut.-Col. T. C. Dickson, Capt. R. E. Wood, Mr. H. O. Cole, Mr. E. E. Lee, and Mr. C. W. Northrop, representing, respectively, the Second Division, the Quartermaster's Department, the Fifth Division, the First Division, and the Panama railroad, has been appointed by the Acting Chairman and Chief Engineer to consider and report upon the facilities required for handling cement after August 1. The report is to include the size and location of a new building for storage purposes. Lieutenant-Colonel Dickson is chairman of the committee.

Trestle for Dumping Mud.

Since the advent of the rainy season, much of the material from slides in the Culebra Cut section has been reduced to mud, the handling of which at the dumps causes a delay in track shifting operations and other work, holding the dirt trains for longer periods, and curtailing the output. To remedy this, the plan of driving a trestle at dump No. 7, on the Panama railroad relocation, about two miles north of Gamboa has been approved. It will be about 35 feet in height, and of the length of one train; it will be used solely for the dumping of mud, and it is estimated that from 90,000 to 100,000 cubic yards of soft material can be dumped therefrom without changing the track.

It was the intention to start driving this trestle at once with piles now on hand, as a big shipment of piles was expected last week. As the Central Division has just been advised that the piles ordered will not be here for a week or two, the trestle will not be started until arrival of new piles, as the present piles must be held for immediate use in case the Naos Island trestle requires redriving.

Tunnel for Empire-Gamboa Wagon Road.

Instead of crossing the Panama railroad relocation at the point where the Obispo Diversion is spanned by it, as provided for in the original survey, the new Empire-Gamboa highway will be continued on the east side of the railroad, passing through the present railroad cut at a distance of about 30 feet from the track. A railing will be placed on the west side of the road through the cut as a protection to traffic. The road on leaving this cut will follow the slopes of the hills until the Sardinilla River valley is reached into which it will dip and cross to

the west side of the railroad by means of a tunnel, thus avoiding the necessity of a grade crossing as originally planned. This tunnel will be about 125 feet long, concrete lined, and of sufficient size to permit the passage of a team and wagon. From the tunnel, the road will climb out of the valley on an easy gradient, and thence it will continue in a nearly direct line to its point of intersection with the Las Cascadas plantation road.

Final Rise of Lake.

Anticipating the schedule, the last gate of the three 8-by-18 foot sluices through the ogee of the Gatun spillway dam was closed at 10.40 a. m., on June 27, with the surface of the lake 48.25 feet above sealevel. It is not expected to open the gates again, and the lake may be considered to be on its final rise to operating level. Under conditions of normal runoff, as determined by measurements recorded over the watershed for the past 23 years, the lake should reach 85 feet about December 1, 1913; it should rise to 71 feet, the elevation of the railroad at Gorgona, about the first of October. At that height it would afford a 21-foot channel. The top of the dike at Gamboa, protecting Culebra Cut from flooding through its north end, is 78.2 feet above sealevel, but it is anticipated that the water will be let into the Cut before the lake has reached that elevation, which it may do about the first of November.

The channel between Gatun and Gamboa has been completed since July, 1912, with the exception of about 300,000 cubic yards of gravel, washed into it by the Chagres River, which are to be removed by dredges. From Gatun to Bohio no excavation was required, except a small quantity at Peña Blanca; the surface of the ground was less than 40 feet above sealevel, and the full lake will afford depth enough for the ships. The channel needed only to be cleared of vegetation and marked with lights and buoys. From Peña Blanca to Tabernilla the excavation was mostly in cutting off the tops of peninsulas formed by the tortuous course of the Chagres. The heavy work was from San Pablo to Gamboa. Total excavation in the Chagres district to date has amounted to 12,384,655 cubic yards. Including what remains to be done, the total excavation for the channel through Gatun Lake is less than the excavation accomplished in Culebra Cut every year since 1907.

Gatun Lake came into existence on April 25, 1910, when the west diversion at Gatun Dam was closed, and the flow from the Chagres and Trinidad rivers was forced through the spillway channel. The head of the spillway was 10 feet above sealevel, which caused the water to rise to a normal surface of 14 feet above the sea. In times of flood, the surface rose to about 18 feet, inundating parts of the

NOTES OF PROGRESS.

(Continued).

Panama railroad through the Black Swamp. On February 15, 1912, the relocated line of the railroad, between Gatun and Gamboa, was placed in use and immediately afterward the removal of the old line was begun. About the same time the sluice gates were closed and the lake was allowed to rise. It attained a maximum elevation of 56.3 feet on November 30, 1912. At this height the water poured over a gap, at 50 feet above sealevel, in the uncompleted ogee, and, in order to allow the completion of the dam during the dry season, the sluice gates were opened in December. On January 1, 1913, the surface of the lake was 48.3 feet above sealevel, around which it has been maintained since, though the completion of the ogee to its elevation of 69 feet was accomplished in April.

Concrete Work in Locks and Spillways.

Concrete work in the Canal locks is nearly completed, the aggregate amount in place at the close of work on June 28, being 4,466,397 cubic yards.

A statement of the concrete laid in the three sets of locks for the Canal, and in Gatun and Miraflores spillways, as of June 28, follows:

GATUN LOCKS.

Concrete laid

June 23.....	36
June 24.....	96
June 25.....	144
June 26.....	132
June 27.....	102
June 28.....	168

Total..... 678
Previously reported..... 2,040,445

Grand total..... 2,041,123

PEDRO MIGUEL LOCK.

June 22.....	50
June 23.....	30
June 24.....	3
June 25.....	
June 26.....	55
June 27.....	9
June 28.....	6

Total..... 153
Previously reported..... 921,250

Grand total..... 921,403

MIRAFLORES LOCKS.

June 23.....	95
June 24.....	143
June 25.....	149
June 26.....	36
June 27.....	58
June 28.....	51

Total..... 532
Previously reported..... 1,503,339

Grand total..... 1,503,871

GATUN SPILLWAY.*

June 23.....	106
June 24.....	88
June 25.....	68
June 26.....	148
June 27.....	50
June 28.....	82

Total..... 542
Previously reported..... 228,200

Grand total..... 228,742

MIRAFLORES SPILLWAY.

June 23.....	787
June 24.....	623
June 25.....	564
June 26.....	694
June 27.....	126
June 28.....	255

Total..... 3,049
Previously reported..... 62,746

Grand total..... 65,795

*Includes hydroelectric station.

Shift of Track Between Mount Hope and Mindi.

About a mile and a half south of Mount Hope the main line of the Panama railroad will be shifted slightly to the east, for the

complete elimination of one curve, and of 11 degrees of the central angle on another. At the same time a rise or fall of four feet in grade will be done away with, and the line will be shortened by 26 feet. The change will straighten the track, allowing greater speed of trains. The chief engineer of the railroad made an estimate for the work in December, 1910, but it was deferred, pending dredging and filling

operations in the vicinity by the forces engaged in the Atlantic entrance channel.

Permission has been granted to an agent of the Spanish-American Iron Company, operating mines in Cuba, to recruit not more than 300 Spanish laborers in Colon and Panama who are not employed by the Isthmian Canal Commission or Panama railroad.

LABOR FORCE AND QUARTERS IN MAY.

The force report for May 28 shows the actual working force of the Canal Commission to be 32,255; of the Panama railroad, 6,213, and of the contractors, 4,565, a total effective working force of 43,033 men. The gold force on the Canal work, composed almost exclusively of white Americans, was 4,337, a reduction of 21, as compared with the previous month. A statement of the Canal force, by divisions, follows:

DEPARTMENT OR DIVISION.	SILVER EMPLOYEES*										Total silver.	Total gold.	Grand total.		
	Artisans					European laborers.		West Indian laborers.							
	Monthly	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.					
Construction and Engineering.	3,767	10	9	342	1,268	1,145	3,627	726	109	391	5,993	2,693	23,312	3,245	26,557
Civil Administration	153	..	..	2	4	26	..	..	..	..	19	204	337	..	541
Sanitation	717	..	..	3	4	..	..	..	..	..	4	348	1,082	370	1,452
Quartermaster's	859	..	..	319	297	65	29	3	34	..	107	832	2,545	188	2,733
Subsistence	727	..	..	2	1	1	..	..	..	..	..	..	743	54	797
Disbursements	7	..	..	..	..	..	..	..	..	..	..	..	7	19	26
Examination of Accounts	25	..	..	..	..	..	..	..	..	..	..	..	25	124	149
Total.....	6,255	10	9	668	1,573	4,241	3,650	729	143	391	6,104	4,139	27,918	4,337	32,255
Month previous	7,005	9	0	670	1,448	4,306	3,579	934	141	382	5,877	4,107	28,467	4,358	32,825

I. C. C. force, 32,255; Panama railroad force, 4,894; Panama railroad commissary force, 1,319; total 38,468.
*All wages specified are in gold. †Includes 246 at seven cents, and one at five cents. ‡Includes 273 at seven cents and 20 at five cents.

The force report of the Department of Construction and Engineering, including the employes of contractors, as of May 28, was, as follows:

DIVISION.	SILVER EMPLOYES*										Total silver.	Total gold.	Grand total.			
	Artisans.					European laborers.		West Indian laborers.								
	Monthly	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.				13 cents.	10 cents.	
Chief Engineer.....	1,812			1	203	684	2,485	1,365	464	27	32	3,207	660	11,023	1,331	12,354
Mechanical Division.....	308	10		56	141	548	61		4			1,396	96	2,644	1,011	3,655
Atlantic Division.....	547			1	68	334	760	595	112			654	141	3,240	312	3,552
Central Division.....	1,100			15	109	352	1,606	146	82	359	736	1,796	6,405	591	6,996	
Pacific Division.....																
U. S. Steel Products Co.....														107	123	230
Chicago House Wrecking Co.....														17	3	20
McClintic - Marshall Co.....														3,857	458	4,315
Total.....	3,767	10	9	342	1,268	4,145	3,627	726	109	391	5,993	4,225	23,312	3,245	26,557	
Month previous.....	4,428	9	9	344	1,143	4,236	3,540	932	107	382	5,755	4,229	23,818	3,289	27,107	

*All wages specified are in gold. †Includes 231 at seven cents, and one at five cents. ‡Includes 229 at seven cents and two at five cents.

QUARTERS.

A report of Commission quarters occupied on May 31, follows:

PLACE.	Gold.			Europeans.			West Indians.		
	Men	Women	Children	Men	Women	Children	Men	Women	Children
Balboa.....	266	36	44	324			619		
Ancon.....	515	299	231	4			808	4	
Corozal.....	738	126	136	433			492 ⁽¹⁾	5	5
Miraflores.....	16	2	3	465 ⁽²⁾	3	11	356 ⁽³⁾	11	4
Pedro Miguel.....	380	73	84	359	3	3	215	37	42
Paraiso.....	287	84	86	144	3	11	234	105	161
Culebra.....	357	151	152	486	46	90	423	119	181
Empire.....	567	312	293	416	52	73	485	143	219
Las Cascadas.....	193	107	130	31	17	29	223	157	128
Bas Obispo.....	73	44	33	151	23	37	143	52	75
Gorgona.....	581	119	136	32	3	7	174	69	121
Gatun.....	721	202	205	919	20	23	1,421 ⁽⁴⁾	29	24
Cristobal.....	779	293	319	137			300	221	352
Toro Point.....	48	15	20	74			252	2	3
Porto Bello.....	69	30	30	110 ⁽⁵⁾					
Totals.....	5,590	1,893	1,902	4,085	170	284	6,876	949	1,315

(1) Includes Sabanas police station, Taboga Island, Culebra Island, Palo Seco and Naos Island. (2) Includes 64 Panamanians. (3) Includes 15 East Indians. (4) Includes 75 Panamanians. (5) Includes Matachin. (6) Includes Colon Hospital. (7) Includes 57 East Indians, 84 Panamanians, and 12 U. S. citizens. (8) Includes 4 Asiatics. Gold force of contractors (included above), 44 families, 571 bachelors.

SOCIAL LIFE OF THE ZONE.

Ancon Club in General Federation.

The president of the Ancon Study Club has received notification of the admission of the club on June 7 to membership in the General Federation of Women's Clubs. The study club was organized on January 24, 1911, and is now the only club in the Canal Zone which is affiliated with the General Federation. There are 14 members. Beginning with July, the monthly dues for active members will be 15 cents, instead of 25 cents, as heretofore. Associate members are admitted on election and payment of annual dues of \$1. The report of the librarian shows the number of subscribers drawing books from the library to be 50. On Thursday, July 10, there will be a semiannual election of officers.

Church Notes.

During the three weeks' absence of the Rev. H. R. Carson, chaplain of Ancon Hospital, and rector of St. Mary's Church, Empire, the services at St. Luke's Hospital Chapel, Ancon, will be maintained as usual, the Rev. Edward J. Cooper, rector of Christ Church, Colon, assuming the charge. The services at St. Mary's will be discontinued until the chaplain's return.

The quarterly meeting of the Isthmian Sunday School Association will be held in the Commission chapel, at Empire, on Sunday afternoon, July 13. The delegates from Cristobal and the intermediate stations will take the train leaving Colon station at 1.10 p. m., and delegates from Panama and the intermediate stations will leave on the 1 o'clock train. The devotional services will begin at 2.15. The principal features of the exercises will be addresses by the Rev. A. A. Nellis, the retiring president; Mr. W. H. Kromer of the Union Sunday School, Cristobal, and Mr. J. T. Page of Porto Bello. There will be an election of officers.

The ladies' auxiliary to the Empire Christian League held an election of officers at the meeting in June, when the following members were chosen: President, Mrs. Phil Kelly; first vice-president, Mrs. W. D. Stanton; second vice-president, Mrs. J. G. Garwood; secretary-treasurer, Mrs. T. M. Drake. At the meeting on Friday, July 11, the mission study class will take up Headland's book on "China's new day."

The Canal Commission has granted a plot of ground in Ancon to the Southern Baptist Convention, for the erection of a permanent church building. The plot, which is 150 feet square, is situated on the road leading to Bishop's Hollow, northeast from Ancon Hospital laundry, and opposite the schoolhouse. It is proposed to erect a small but adequate concrete building on the site. Arrangements are under way for further extension work of the Baptist mission in the permanent town of Balboa. The Rev. J. L. Wise is superintendent of the mission in Panama and the Canal Zone.

The Woman's Altar Guild of St. Luke's Hospital Chapel, Ancon, has resumed its meetings, the first having been held at the home of Mrs. Frank Feuille on Tuesday, June 24, when there was a good attendance. Two new members were enrolled, and the guild welcomed the newly appointed chaplain, the Rev. H. R. Carson. The next meeting will be held at the residence of Mrs. Gorgas, on Tuesday afternoon, July 8, at 3.30 o'clock.

A new Mason and Hamlin cabinet organ

has been purchased for the seawall Methodist Episcopal Church, Panama, and will be dedicated on Sunday morning, July 6. Children's day will be observed on the same day, and morning service will be combined with the Sunday school exercises, the service to begin at 10 a. m. A special program has been arranged for the occasion. Mr. Skinner will be the soloist.

The Woman's Foreign Missionary Society of the Methodist Church will meet at the residence of Mrs. E. M. Keyser, on Saturday afternoon, July 12, at 2.30 o'clock.

Third Annual Commencement of the Canal Zone High School.

There was a large attendance at the third annual commencement of the Canal Zone High School, held at the Commission clubhouse at Empire, on Tuesday evening, June 27. The hall was decorated with yellow and black, the high school colors, and green and gold, the colors of the senior class, with school pennants between the doors. While the audience was assembling, the orchestra of the Tenth Infantry played popular airs and selections from operas. The procession of the school through the hall, which marked the opening of the exercises, took place at 8.30. The under school preceded, then came six girls of the sophomore class bearing chains of pink and white blossoms before the seniors. The graduating class occupied the platform, accompanied by the faculty. The program announced in the last issue of THE CANAL RECORD was carried out. Following the exercises, the juniors gave a reception to the seniors. There was informal dancing until about 11 o'clock, refreshments being served during the time.

PERSONAL.

Lieut.-Col. D. D. Gaillard is a passenger on the *Colon*, due to arrive at Cristobal on Wednesday, July 2.

Mr. C. G. Van Riper, passenger agent of the Panama Railroad Company at its office in New York city, accompanied by Mrs. Van Riper and two daughters, arrived on the *Ancon*, which docked at Cristobal on Friday, June 27.

Obituary.

The death of Thomas J. Myers, an American, employed as a locomotive engineer in the Fifth Division, occurred at Ancon Hospital on Monday, June 23. He was 53 years of age, a widower, and had been on the Isthmus five and one-half years. He was a native of California, and had no immediate relatives. The funeral services were held at Ancon Hospital chapel on Sunday, June 29, under the auspices of the Knights of Pythias, of which order he was a member.

Mrs. John Cameron, the wife of Mr. John Cameron, living at Cristobal, died in Colon Hospital on June 28. She was 45 years of age, and had been on the Isthmus six months.

Revenue Collections for May.

Collections other than postal collections during the month of May, 1913, were, as follows:

Bicycle, chauffeur and navigator licenses.....	\$25.00
Motor vehicle licenses.....	53.00
Steamboat inspection.....	40.00
Insurance collections.....	50.00
Taxes, licenses, etc., (deputy collectors of revenues.....)	4,537.82

NONREVENUES.

Cash received from estates.....	6,188.78
Value of estates closed.....	3,723.04

FUNDS FOR CANAL WORK.

Appropriations for Fiscal Year 1913-14 for Various Departments, and for Fortifications.

Provision for carrying on work on the Canal, and on the fortifications, including the armament thereof, during the fiscal year ending June 30, 1914, was made in the Sundry Civil Act, approved June 23, 1913. The appropriation for the Canal work amounts to \$16,265,393, divided into the following items:

Salaries of officers and employees in the United States.....	\$153,393
Incidental expenses in the United States, including rent of the Panama Canal building in the District of Columbia, \$7,500; textbooks, and books of reference, \$1,000; and additional compensation to the Auditor for the War Department for extra services in auditing accounts of the Panama Canal....	\$63,000
Salaries of members of the Canal Commission, and officers and employees on the Isthmus, other than skilled and unskilled labor, in the departments of construction and engineering, quartermaster's, subsistence, disbursements, and examination of accounts; and for those employed in connection with the preservation of plans, drawings, and other records.....	2,725,000
Skilled and unskilled labor on the Isthmus in the departments of construction and engineering, quartermaster's, subsistence, disbursements, and examination of accounts.....	6,125,000
Material, supplies, and equipment, and other expenses not in the United States, including the construction in the United States in Government or private yards, in accordance with plans and specifications to be prepared by the Navy Department, and to have a cargo capacity of 12,000 tons of coal and a speed of not less than 14 knots per hour, two colliers to cost not exceeding \$1,000,000 each; and including the payment of damages caused to the owners of private lands, or private property of any kind, by reason of the grants contained in the Treaty between the United States and the Republic of Panama, proclaimed February 26, 1904, or by reason of the operation of the United States, its agents or employees, or by the reason of the construction, maintenance, operation, sanitation, and protection of the Canal, or of the works of sanitation and protection therein provided for, whether compromised by agreement between the claimant and the Chairman of the Commission, or allowed by a joint commission, and the payment for land and land under water as authorized in Section 3 of the Panama Canal Act, for the departments of construction and engineering, quartermaster's, subsistence, disbursements, and examination of accounts.....	5,000,000
Miscellaneous expenditures, including recruiting and transportation of laborers, transportation of employees from the United States, repatriation of laborers and employees, and all other incidental and contingent expenses, not otherwise provided for, in the departments of construction and engineering, quartermaster's, subsistence, disbursements, and examination of accounts.....	725,000
Salary of member of the Canal Commission in charge of the Department of Civil Administration, and of the officers and employees, other than skilled and unskilled labor, in the departments of civil administration and law, together with the necessary portion of such sums as shall be paid as water rentals or directly by the Government Panama for the maintenance of water works, sewers, and pavements in the cities of Panama and Colon.....	500,000
Skilled and unskilled labor in the Department of Civil Administration, together with the necessary portion of such sums as shall be paid as water rentals or directly by the Government of Panama.....	

ma for the maintenance of water works, sewers, and pavements in the cities of Panama and Colon; and for material, supplies, etc., and contingent expenses of the departments of civil administration and law, including not exceeding \$500 for law books, together with the necessary portion of such sums as shall be paid as water rentals or directly by the Government of Panama for the maintenance of water works, sewers, and pavements in the cities of Panama and Colon.....	74,000
Salary of member of the Canal Commission in charge, and of officers and employes, other than skilled and unskilled labor, of the Department of Sanitation on the Isthmus, including those temporarily detailed for duty away from the Isthmus	450,000
Skilled and unskilled labor of every grade and kind for the Department of Sanitation on the Isthmus	150,000
Material, supplies, etc., including medical aid and support of the insane, and of indigent persons permanently disabled, while in the line of duty and in the employ of the Isthmian Canal Commission, from earning a livelihood, and contingent expenses of the Department of Sanitation on the Isthmus, including \$100,000 for the construction of a quarantine station.....	300,000
Total.....	\$16,265,393

The foregoing sums, so far as necessary, shall be available for the operation of the Canal, for the permanent organization authorized to be established under the Panama Canal Act; for dry docks, repair shops, yards, docks, wharves, warehouses, storehouses, and other necessary facilities and appurtenances; for the purpose of providing coal and other materials, labor, repairs, and supplies; for the office buildings, quarters, and other necessary buildings; for the payment of claims arising out of injuries to, or death of employes; and for the consolidation and preservation of the files of papers and other records which have accumulated, or may accumulate during the construction of the Canal, and needed or useful or have a permanent value or historical interest.

The entire appropriation is made available until expended, and, exclusive of fortifications, and of the amount used for operating the Canal and for the permanent organization after the Canal is opened for use and operation, shall be paid from out of the proceeds of the sale of bonds. In cases of emergencies arising subsequent to and unforeseen at the time of submitting the annual estimates to Congress, 10 per cent of the foregoing amounts shall be available interchangeably for expenditure on objects named, but not more than 10 per cent shall be added to any one item of the appropriation. No part of the appropriations shall be applied to the payment for longevity service or layover days, other than such as may have accumulated prior to July 1, 1909.

FORTIFICATIONS.

The appropriation for continuing the work of fortifying the Canal, and for providing the armament thereof, amounts to \$4,870,000, and is apportioned, as follows:

SURVEYS.

For detailed surveys of the areas of the Canal Zone required for military purposes, including the cost of marking permanently the boundaries of such areas.....	\$12,000
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PURCHASE OF LAND.

For the purchase of land on the Canal Zone required for military purposes....	50,000
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SEACOAST BATTERIES.

For the construction of seacoast batteries on the Canal Zone.....	2,635,000
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ELECTRIC LIGHT AND POWER PLANTS.

For the purchase and installation of electric light and power plants for the seacoast fortifications on the Canal Zone.....	173,000
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SEARCHLIGHTS.

For the purchase and installation of searchlights for the seacoast fortifications on the Canal Zone.....	285,000
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SANITARY CLEARING.

For sanitary clearing, filling, and drainage in vicinity of camps, posts, and defensive works on the Canal Zone, as follows:	
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Margarita Island, for filling swamp in rear of defensive works.....	180,000
For clearing and improving permanent post site and drill ground at Miraflores.....	30,000

ARMAMENT OF FORTIFICATIONS.

For the purchase, manufacture, and test of seacoast cannon for coast defense, including their carriages, sights, implements, equipments, and the machinery necessary for their manufacture at the arsenals, to cost ultimately not to exceed \$2,506,000; provided, that the Chief of Ordnance, is authorized to transfer to and use in the fortifications of the Panama Canal one 16-inch gun and carriage, procured, or to be procured, out of appropriations heretofore made under armament of fortifications for continental United States.....	1,000,000
For the purchase, manufacture, and test of ammunition for seacoast cannon, including the necessary experiments in connection therewith, and the machinery necessary for its manufacture at the arsenals.....	575,000

FIRE CONTROL.

For the construction of fire control stations, and the purchase and installation of accessories therefor.....	200,000
Total.....	\$4,870,000

CANAL ZONE FUNDS.

Section 2 of the Act provides that all funds collected by the government of the Canal Zone from rentals of public lands and buildings in the Canal Zone and the cities of Panama and Colon, and from court fees and fines, and collected or raised by taxation in whatever form under the laws of the government of the Canal Zone, are appropriated until and including June 30, 1914, as follows: The revenues derived from the postal service to the maintenance of that service; the remaining revenues, including any balances unexpended in prior years, after setting aside a miscellaneous and contingent fund of not exceeding \$10,000; to the maintenance of the public school system in the Zone; to the construction and maintenance of public improvements within the Zone; to the maintenance of the administrative districts; and for the expenses of the subdivisions of the Canal Zone after they are established under Section 7 of the Panama Canal Act; to the maintenance of Canal Zone charity patients in the hospitals of the Isthmian Canal Commission, and to the maintenance of administrative district prisoners.

CANAL APPROPRIATIONS.

A statement showing the appropriations by Congress for the Isthmian Canal, and for fortifications, and the armament thereof, up to and including the present fiscal year, is given below:

ACT OF CONGRESS APPROVED.	Appropriation.	Deficiency.
June 28, 1902	*\$40,000,000.00	.....
April 28, 1904.....	110,000,000.00	.....
June 28, 1902.....	10,000,000.00	.....
December 21, 1905.....	11,000,000.00	.....
February 27, 1906.....	.....	5,990,786
June 30, 1906.....	25,456,415.08	.....
March 4, 1907.....	27,161,367.50	.....
February 15, 1908.....	.....	12,178,900
May 27, 1908.....	29,187,000.00	.....

ACT OF CONGRESS APPROVED.	Appropriation.	Deficiency.
March 4, 1909	33,638,000.00	5,458,000
February 25, 1910.....	.....	76,000
June 25, 1910.....	37,855,000.00	.....
Special acts, relief of private persons.....	21,411.56	.....
March 4, 1911.....	45,560,000.00	.....
August 24, 1912.....	28,980,000.00	.....
June 23, 1913.....	16,265,393.00	.....
Total.....	\$315,124,587.14	\$23,703,686
Deficiency.....	23,703,686.00	.....
Grand total.....	\$338,828,273.14	.....

*For purchase of Canal rights from the French.

†For purchase of Canal Zone rights.

FORTIFICATIONS.

March 4, 1911.....	\$3,000,000
August 24, 1912.....	2,806,950
June 23, 1913.....	4,870,000
Total.....	\$10,676,950

The expenditures to April 30, 1913, amount to the following:

Canal work.....	\$289,426,715.28
Fortifications.....	2,801,664.06
Total.....	\$292,228,379.34

Canal Zone Postal Savings Bank Transactions.

A statement of the postal savings bank transactions at Canal Zone postoffices for the month of May, follows:

NAME OF OFFICE.	Postal savings certificates issued.	Postal savings certificates paid.
Ancon.....	\$10,243.00	\$8,184.00
Balboa.....	9,127.00	8,126.00
Bas Obispo.....	2,719.00	1,805.00
Corozal.....	22,134.00	26,613.00
Cristobal.....	11,148.00	15,180.00
Culebra.....	8,971.00	11,064.00
Empire.....	8,765.00	8,058.00
Gatun.....	17,971.00	14,027.00
Gorgona.....	15,831.00	14,497.00
Las Cascadas.....	10,284.00	9,317.00
Matachin.....	1,350.00	366.00
Miraflores.....	6,570.00	3,825.00
Paraiso.....	10,200.00	10,912.00
Pedro Miguel.....	14,499.00	13,449.00
Cristobal, Sta. "A".....	1,165.00	945.00
Cristobal, Sta. "B".....	2,010.00	1,194.00
Total.....	\$152,987.00	\$147,562.00
Deposits on hand May 1, 1913.....	\$640,045.00	.....
Amount deposited in May.....	152,987.00	.....
Amount withdrawn in May.....	.....	\$147,562.00
Balance on hand June 1, 1913.....	.....	645,470.00
	\$793,032.032	\$793,032.00

Joint Land Commission Award.

In the matter of the estate of Palenquillo and Frijol Grande—To Margaret Rose Smith for the entire interest in 100 acres reserved by her in deed of sale to Martin Linczer, dated March 17, 1913, together with all improvements to which she is entitled under the terms of certain leases issued to tenants, together with all other rights thereto, \$1,000.

To Martin Linczer for his entire interest in that portion of the estate acquired from Margaret Rose Smith under date of March 17, 1913, together with all improvements thereon and rights relating thereto, \$11,250, subject to such equities, if any, as may be possessed by third parties, the amount of the award to be deposited with the Circuit Court of the Second Judicial Circuit of the Canal Zone for distribution in accordance with the terms of the award.

To Mrs. George Francis Hill for the entire interest in the improvements on 10 acres of land leased from Martin Linczer, with all rights relating thereto, \$700.

To Mesma Chichi for the entire interest in improvements on the lands of Margaret Rose Smith, \$25.

BARRIER AT GATUN LOCKS.

Railway Connection Over Atlantic Entrance Channel to be Maintained Until September 15.

The committee, consisting of Maj. G. M. Hoffman, chairman; Mr. E. E. Lee, Mr. W. J. White, and Mr. Charles L. Parker, designated by the heads of the Atlantic, First, and Sixth Divisions, and Quartermaster's Department, respectively, at the request of the Chairman and Chief Engineer, to report on the most advantageous procedure in the removal of the barrier beyond the lower end of Gatun Locks, submitted to the Acting Chairman and Chief Engineer three plans, from which he should choose on grounds of general policy.

The barrier supports a railway track connecting the tracks on the west side of the locks and about Gatun Dam, with the Panama railroad, east of the Canal, and the principal problem was the maintenance of this connection. The Atlantic entrance channel is completed up to the line of the track, and if the dredges could proceed without hindrance, they would operate from both sides of the barrier and remove economically the 1,060,000 cubic yards contained in it, by August 1.

The departments concerned agreed that the plan of immediate excavation was feasible, but that it would involve the segregation of all the plant engaged on the west side, principally in the construction of the spillway and hydro-electric station, and in excavation for Gatun Dam. It would require that the locomotives be repaired, coaled, and hosted on the west side, and that all supplies, including coal, be handled by water across the Canal, with the necessity of constructing wharf facilities. A wrecking crane would have to be isolated on the west side, for use in railway accidents and in handling the heavy timber bulkheads for the sluices in the spillway dam. Moreover, it is regarded as necessary to have track connections until July 15, at least, for the two daily trains of hard rock from Balboa for paving Gatun Dam.

The committee pointed out that a trestle could be constructed across the completed channel, near the barrier, for the maintenance of connection as long as desired. The removable truss span in the present track could be installed in the trestle for the passage of dredges and auxiliary vessels, and larger vessels might be passed by the removal of an additional bent adjacent to the span. The trestle would be 750 feet long, and the estimated cost, \$18,000.

The third plan, which the Acting Chairman has approved, allows three pipeline suction dredges to proceed with the excavation of the barrier from the side toward the locks, leaving until September 15, an embankment across the channel, 75 feet wide and containing approximately 180,000 cubic yards, to support the connecting track. After that date, the work on the west side will be so far advanced as not to be seriously affected by lack of railway connection; and the dredges will be able to remove the greater part of the remaining material in the last 14 working days of September, and clear the channel for the passage of vessels by October 1.

Levelman and Transitman Examination.

Examination for promotion to the positions of levelman and transitman is scheduled to be held in the Commission clubhouse at Empire, on Sunday, July 20.

The examination will commence promptly

at 9 a. m., and will be divided into three parts, which will be given in the order indicated, viz: Written and oral examination, and a statement of education and experience. Competitors will be required to complete the written portion of the examination before 1 p. m.

Applications for examination should be addressed to the undersigned, *through the head of department or division*, before the close of business on Thursday, July 17.

Applicants should bring to the examination room pens, pencils, triangles, and tables of circular functions, but no paper, ink, or blotters.

Applicants who fail to appear for examination before 9 a. m., or who do not apply for examination through the proper channels before the close of business on Thursday, July 17, will not be admitted to the examination.

No card of admission will be needed.

A. B. NICHOLS,
Chairman, Examining Board.

Red Cross Finances.

A statement of the finances of the Canal Zone Chapter, American National Red Cross, for the month of May, 1913, follows:

RECEIPTS.		
May 1,	On hand.....	\$2,533 09
	Repaid to Red Cross on money advanced destitute American family, Panama.....	30.00
31,	Membership dues.....	2.50
		\$2,565 59
DISBURSEMENTS		
May 5,	Postage.....	\$2 00
5,	Disbursing officer, printing.....	22.76
5,	Relief of American at Culebra.....	30.00
12,	Relief of destitute Spanish woman, Empire.....	10.00
20,	Transportation for Colombian, deported.....	25.00
20,	Relief of wife of Zone prisoner, Culebra.....	5.00
21,	Relief of destitute woman, Ancon.....	5.00
26,	Relief of tuberculosis patient, Colon Hospital.....	25.00
31,	Deportation of Jamaican woman and child.....	15 00
Total.....		\$139.76
May 31,	Balance on hand.....	\$2,425.83
	JOHN L. PHILLIPS,	
Approved:	<i>Treasurer.</i>	
	EDW. SCHILDHAUER, <i>Chairman.</i>	

Missing Men.

Any one having information regarding the whereabouts of Messrs. John Hastings, formerly of Findlay, Ohio, and Frank L. Miles, formerly of Washington, D. C., who are supposed to be on the Isthmus, is requested to communicate with the American Legation, Panama.

Any one having information regarding the present whereabouts of Mr. Edward Mooney, formerly of West Philadelphia, Pa., who is supposed to be on the Isthmus, is requested to communicate with THE CANAL RECORD.

Counterfeit Money.

A few counterfeit two-dollar United States bills have made their appearance on the Isthmus; the quantity in circulation is unknown. The bill is described in *The National Counterfeit Detector*, as follows:

"A 110. Series 1899. W. T. Vernon, Register. Chas. H. Treat, Treasurer. Printed from etched plates of fair workmanship on good quality bond paper; no attempt to imitate the silk fibre. Blue seal, large numerals, and numbers good. Portrait of Washington worst feature of note, lacking the lifelikeness of genuine. Green ink on back much darker than genuine."

CONCRETE-HANDLING CRANES.

Lofty Steel Structures Used in Pacific Locks Are Offered for Sale.

Proposals are invited for the purchase of the eight steel cantilever cranes used in handling about 98 per cent of the concrete for Pedro Miguel and Miraflores Locks. Bids will be opened in the Washington office of the Commission on July 14. It is anticipated that all of the cranes will be out of service in the Canal construction by September 1, though it is possible the four berm cranes may be transferred for service at the permanent coal-handling plants. Bids have accordingly been invited under seven separate specifications as follows:

For the berm cranes, complete as they stand, including repair parts in stock; for the chamber cranes, under the same conditions; for dismantling the berm cranes, and handling to storage yard; for the berm crane structures, exclusive of concrete mixers, machinery, motors, cables, etc.; for the chamber crane structures only; for all the motors, machinery, etc., excluded under the bids on the structures only of the berm cranes; and for the motors, etc., of the chamber cranes.

The berm cranes, so-called, because they operate from a berm alongside the lock wall, are equipped with concrete mixing plants, in the lower portion of the tower. They are of the cantilever type, with a fixed cantilever, 150 feet long, on one side, for supplying sand and stone, and a swinging boom, 144 feet in length, for delivering concrete, on the other. The bottom of the cantilever is 62 feet six inches above the supporting track; to the top of the machinery house, each crane is 90 feet high, and weighs, with the machinery, approximately 1,200,000 pounds. The four chamber cranes, which work from the bottom of the lock chambers, are without mixing plants. They are of the balanced cantilever type with arms extending on either side, which afford a continuous runway 191 feet in length; the height is 97 feet six inches to the bottom of the cantilever, and 115 feet to the top of the machinery house, and the weight, including machinery, is approximately 500,000 pounds. A complete description of the two types of crane was published in THE CANAL RECORD of January 4, 1911.

The cranes have been in service approximately three years, during which time they have delivered about 2,300,000 cubic yards of concrete to the lock walls. The structures have been painted from time to time and are in excellent preservation. All cranes are now at Miraflores Locks.

The following table shows the dates on which the cranes go out of service, and the dates by which they must be removed, under terms of sale:

LOCATION OF CRANES.	Out of service.	To be removed.
Berm cranes, west side of lower lock.....	June 1	Aug. 27
Chamber crane, upper east chamber.....	June 20	Aug. 27
Chamber crane, south guide wall.....	July 1	Aug. 27
Chamber crane, south guide wall.....	July 10	Aug. 27
Chamber crane, lower east chamber.....	July 20	Aug. 27
Berm cranes, east side of lower lock.....	Sept. 1	Nov. 1

Cost of New Hotel Washington.

The total expenditure chargeable to the completed Hotel Washington to June 1, was

\$633,436.86, including \$15,255.79 for construction charges in April, 1913, and \$23,964.99 in May. The total is itemized, as follows:

Construction cost, hotel proper.....	\$565,913.28
Swimming pool, seawall, etc.....	30,823.58
Sidewalks, grading, etc. (estimated).....	19,500.00
Moving buildings and clearing site.....	15,000.00
Employees' barracks (estimated).....	4,200.00
Total.....	\$633,436.86

Final Preparations for the Fourth.

The final meeting of the executive committee for the Fourth of July celebration was held at the Strangers Club in Colon, on Saturday afternoon, June 28, with all members present. Reports from the heads of the various committees showed that the arrangements were well in hand. The chairman of the entertainment committee reported that about 400 feet of dock No. 16, where the dance is to be held, will be protected with canvas. A stand for use as a speaker's platform during the patriotic exercises, and for service in viewing the athletic and aquatic contests will be erected on Roosevelt avenue. Work on the decorations was begun on Monday. It has been decided to eliminate the tugboat races from the day's program. Upon motion, an additional allotment of \$300 was made the entertainment committee, \$100 of which will be for use of the reception committee.

The chairman of the fireworks committee reported that the shipment of fireworks was received on the steamer *Ancon*, on June 27, and that the Cristobal display will be set off from dock No. 17 in full view of the spectators that may assemble on dock No. 16, Roosevelt avenue, and Front street, Colon. It has been decided to hold the combined display for the villages of Culebra and Empire at the baseball park in Culebra, instead of at Empire, as originally planned.

The chairman of the music and dance committee reported that the plan is to have the Tenth Infantry band play during the forenoon, the Marine band at the patriotic exercises and during the afternoon, and the Tenth Infantry orchestra at the dance on pier No. 16, at night. About 20 numbers have been provided for the dance, during which refreshments will be served.

The chairman of the transportation committee reported that all trains will stop at Cristobal, and the Fourth of July visitors, therefore, will not be required to go to the Colon station. The official programs for the day's events will be handed out by boy scouts, who will meet the trains, and circulate among the people on the grounds.

A special effort is being made by those in charge of this year's athletic events to see that they are carried out promptly. It is requested that all contestants report punctually for the events in which they may be entered. No contest will be delayed after it is once called.

Special preparations have been made at the new Hotel Washington for the Fourth. A cold luncheon will be served from 11.30 a. m., until 1.30 p. m., at 50 cents, and a special *table d'hôte* dinner will be served from 5.30 until 7.30 p. m., at \$1. There will be no 30-cent meals served at the hotel after breakfast on that day. Meal tickets may be received in payment.

Besides the dinner concert on the evening of the Fourth, the Strangers Club will hold an old-time "stag" dinner, July 3, at 8 p. m. Holders of visitors' cards are entitled to all club privileges.

OFFICIAL CIRCULARS.

Sale of Material and Supplies.

CULEBRA, C. Z., June 25, 1913.

CIRCULAR No. 399-A:

1. Sales of materials and supplies from stock, including fabricated articles, printed matter, rock, sand, and gravel, excluding only sales of medical and surgical supplies and sales of school books and supplies, which latter may continue to be sold by the Chief Sanitary Officer and the Superintendent of Schools as now authorized, may be made by the Depot Quartermaster, as follows:

(a.) Materials and supplies that can be spared may be sold to officers and employees of the Isthmian Canal Commission and the Panama Railroad Company, and other departments of the United States Government, for their personal use, and to clubs, societies, and other organizations of such employees.

(b.) Materials and supplies that can be spared may be sold to the Canal Zone Government, to the Panama Railroad Company, to the Commission clubhouses, and to other departments of the United States Government; also, to steamship companies and their agents for use on ships.

(c.) Materials and supplies that can be spared and are not obtainable in the local markets may be sold to individuals and companies, except that if the amount of the sale in any case will exceed \$250, prior authority from the Chairman must first be obtained.

2. Stock materials and supplies, including all other articles covered by Section 1, shall be delivered at the nearest storehouse from which such articles may be spared to the purchaser, at cost or price-book prices plus the usual surcharge, except in such cases as may be provided for otherwise by contract. In case the articles purchased must be shipped, the purchasers shall pay the regular rates of the Panama Railroad Company applicable thereto.

OBsolete AND SURPLUS MATERIALS, SUPPLIES, AND EQUIPMENT.

3. The value of all materials, supplies, and equipment no longer needed or no longer serviceable shall be appraised by a Board of Appraisal appointed by the Chairman, which shall meet weekly. The Board of Appraisal shall fix the selling price for such materials, supplies, and equipment, and, after such prices are approved by the Chairman, sales may be made by the Depot Quartermaster at the prices thus fixed without additional authority to an amount in any one case of \$100. Sales amounting to \$100, or over, shall be referred to the Chairman for approval.

4. If shipment of materials, supplies, and equipment no longer needed and no longer serviceable which are sold is to be made by freight, the purchaser shall be entitled to and shall pay to the Panama Railroad Company the freight rates fixed by the tariff for Isthmian Canal Commission business effective January 1, 1907, and supplements thereto, namely: \$2.25 per ton of 2,000 pounds, minimum carload weight of 20,000 pounds, and minimum charge of 20 cents; \$50 each movement, dead weight in train, for special equipment, such as steam shovels, locomotives, cranes, and pile drivers, and \$5 for each empty car. If the general local tariff rates are lower than the rates specified above, such rates will apply. The Depot Quartermaster at Mount Hope will specify on shipping papers the cases in which these rates apply.

GENERAL PROVISIONS COVERING BOTH STOCK AND OBSOLETE MATERIAL.

5. Delivery of materials, supplies, and equipment shall be made only after submission to the Depot Quartermaster at Mount Hope or the District Quartermaster at Ancon of two copies of bills on which are endorsed certificates signed by the Treasurer of the Republic of Panama, or by his authorized representative in Panama or Colon, that customs duties on such materials, supplies, and equipment have been paid, or that they have been remitted, unless sales are made to individuals and companies who have been granted blanket authority by the Republic of Panama to make purchases without payment of customs duties, and with the exception that this requirement shall not apply to sales to the Panama Railroad Company, the Canal Zone Government, the clubhouses, and other departments of the United States Government, nor to sales to contractors with the Commission or the Panama Railroad Company, where the articles purchased are for use in connection with their contracts; to sales to steamship companies and other individuals and companies, where the articles are purchased for use solely outside of the territorial limits of the Canal Zone and the Republic of Panama; to sales to churches, charitable organizations, etc.; to sales to officers and employees of the Isthmian Canal Commission and the Panama Railroad Company; to officers and enlisted men of the Army,

Navy, and Marine Corps; and to officers and employees of other departments of the United States Government on duty on the Isthmus, where the articles are purchased for personal use; and to sales to clubs, societies, and other organizations of such officers and employees.

6. All sales shall be for cash, unless otherwise specifically authorized by the Chairman, except that sales in the following cases may be made without the payment of cash at time of delivery:

(a.) Sales to other departments of the United States Government, the Canal Zone Government, the Panama Railroad Company, and the Commission clubhouses.

(b.) Sales to contractors with the Isthmian Canal Commission and Panama Railroad Company, to steamship companies and others in cases in which such individuals or companies secure the payment for material, supplies, equipment, and services furnished by the Commission by making a deposit of cash or satisfactory certified check, or by giving bond in form and with sureties satisfactory to the Examiner of Accounts of the Commission in an amount to be fixed by the Depot Quartermaster to cover the credit which it is deemed advisable to grant, and conditioned for the payment for material, supplies, equipment, and services furnished by the Commission within thirty days from the end of the month within which delivery of the materials, supplies, and equipment is made, or the services rendered.

(c.) Sales to contractors, with the Isthmian Canal Commission and the Panama Railroad Company, and to steamship companies in case the Isthmian Canal Commission or the Panama Railroad is indebted to such contractors or companies for material furnished or services rendered by them to the Commission or the railroad company, in an amount equal to or in excess of the value of any material, supplies, and equipment sold or services rendered by the Commission to such contractors or steamship companies.

The above instructions shall be effective July 1, 1913.

H. F. HODGES,
Acting Chairman.

New Account, Classified Expenditures.

EMPIRE, C. Z., June 21, 1913.

CIRCULAR No. 44:

The following new account in the classified expenditures of the Isthmian Canal Commission is hereby authorized under Department of Construction and Engineering-General:

Account No. 366—PERMANENT OIL PIPE LINE.

A—Construction. To this account will be charged all expenses incurred in connection with constructing a permanent oil pipe line across the Isthmus, including salaries and wages, material and supplies, and other incidental expenses in connection therewith.

B—Maintenance. To this account will be charged all expenses in connection with the maintenance of a permanent oil line after it has been constructed and put into operation.

Approved: H. A. A. SMITH,
Examiner of Accounts.
H. F. HODGES,
Acting Chairman and Chief Engineer.

Dumping of Ashpans on P. R. R. Tracks.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., June 28, 1913.

G. S. BULLETIN No. 5.
TO ALL CONCERNED.

Effective at once, all I. C. engines must discontinue the practice of dumping ashpan on P. R. R. tracks.

J. D. PATTERSON,
General Superintendent.

Married.

CHASE-BURD—On June 25, in the Union Church, Cristobal, Miss Edna Burd of New Berlin, New York, to Mr. Charles Meyer Chase of Johnstown, New York, the Rev. Carl H. Elliott officiating. Canal Zone residence, Porto Bello.

MARSHALL-BISHOP—On Saturday, June 7, at Ancon, Miss Irene Bishop of Empire, to Mr. Edward L. Marshall, also of Empire, the Rev. Harry Compton of the seawall Methodist Church, Panama, officiating.

SHRIGLEY-ARCHER—On June 14, at Ancon, Miss Margaret Archer, to Mr. Louis Shrigley, both of Ancon, the Rev. Mr. Compton officiating.

MORITZ-HOLT—At Ancon, on Thursday, June 19, by the Rev. Harry Compton, Miss Vivienne Holt to Mr. Oscar L. Moritz, both of Ancon.

HAGGERTY-BROWN—At Paraiso, at the home of the bride, on June 28, Miss Grace Eugene Brown, daughter of Mrs. W. T. McIntyre, to Mr. John Bernard Haggerty of Paraiso, the Rev. Mr. Compton officiating.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule for moving pictures for the week July 7 to 12 is, as follows: Monday, Corozal; Tuesday Empire; Wednesday, Gorgona; Thursday, Culebra; Friday, Gatun and Porto Bello; Saturday, Cristobal.

COROZAL.

The local chess team played a return series of games with a team from Gatun and Cristobal, with the following results:

Corozal.	Gatun.
Gartrell..... 2	Logan..... 0
Sherrard-draw..... 2	Honer..... 1
Morehead..... 1	McQueen..... 0
Kingsbury..... 0	Connor..... 2
Mills..... 1	Ogden..... 1
Fields..... 1	Shropshire..... 1

CULEBRA.

A social and entertainment was held at the schoolhouse on Friday night, June 27. The following program was given: Piano solo, Mr. C. C. Pearsall; mandolin and piano selection, Mr. Ramsey, Mr. Arbuckle, and Mr. Pearsall; solo, Mr. H. T. Critchlow; reading, Mr. J. T. Silver; quartet, Messrs. Case, Newbold, Dickson, and Ross; sketches, Mr. Geo. W. K. Newbold; solo, Mr. W. G. Ross. Popular songs were sung between the numbers. The game "A trip to Copenhagen" was played, and Miss Steelman won the prize, a Culebra pennant. In the bean bag contest for the bachelors, Mr. Koperski won first place, with a cake as a prize. Refreshments, consisting of ice cream, punch and cake, were served.

Entries are being received for a July handicap bowling tournament. All those desiring to enter are requested to do so promptly, as the tournament will be started on Monday night, July 7.

EMPIRE.

The elimination bowling tournament was won by Mr. Casey. The ragtime tenpin tournament has started with 31 men entered. Each player is to bowl each other player two games.

The gymnasium class meets every week. All interested are invited to join; also, to take part in the handball tournament which started on Monday, June 30.

The standing of the handicap pool tournament is, as follows:

Name.	Won.	Lost.
Dryden.....	11	2
Jacques.....	11	3
McCullough.....	10	5
Potter.....	9	4

It is planned to close the tournament by July 10.

A farewell reception to which the public is invited will be given the Rev. A. A. Nellis and family in the Empire clubhouse, on Friday evening, July 11, at 8.15. Rev. Nellis entered the service of the Commission as a chaplain on January 17, 1910, and has been located at Empire the greater part of the period. He and his family expect to leave for the United States, on or about July 15, and will locate permanently in Columbus, Ohio. The following program has been arranged:

1. Selection..... J. P. Prochaska's orchestra
2. History of the Empire Christian League..... Mr. H. A. A. Smith
3. Duet—*Ever of Thee*..... Denza
Mrs. Frank Roberts, soprano.
Mrs. Diedrich, contralto.
4. Piano solo—*Romance*..... Sebellius
Mr. C. C. Pearsall.
5. Tenor solo—*Wrecked and rescued—"The Raft"*..... Pinsuti
Mr. H. W. Dohrmann.
6. Selection..... J. P. Prochaska's orchestra
7. Tenor solo—*When the sands of the desert grow cold*..... Ball
Mr. W. G. Ross.
8. Piano solo—*Concert March*..... Wollenhauff
Mr. C. C. Pearsall.
9. Baritone solo—*The little hero*..... Adams
Mr. Frank Skinner.
10. My experiences on the Isthmus..... Rev. A. A. Nellis
11. Duet—*At the balmy breath of spring*..... Marzo
Mrs. Frank Roberts, soprano.
Mrs. Diedrich, contralto.
12. Selection..... J. P. Prochaska's orchestra
13. Reception and refreshments.

There will be a patriotic address by Mr. W. B. Childers on Sunday evening, July 6. Special instrumental music will be furnished.

On Sunday evening, July 6, Mr. F. A. Gause, superintendent of schools, will deliver an illustrated lecture on Panama and the Panama Canal.

GORGONA.

A special "home" social will be held on Thursday

evening, when home made cake and other refreshments will be served.

The bowling tournament will be continued.

The handball tournament for the night men will begin this next week. Eight men have entered, making a total of four teams.

The volleyball team is now preparing to play the Culebra team a return game.

GATUN.

All Isthmian records for duckpins were broken on Friday evening, June 27, when D. C. Galloway of the Gatun Y. M. C. A. rolled a score of 149. The score by frames was, as follows:

1—18, 2—36, 3—56, 4—75, 5—84, 6—100, 7—109, 8—124, 9—140, 10—149. Spares were made in the 1st, 2nd, 3rd, 6th, 8th, and 9th frames, a strike in the 4th, and splits in the 5th and 7th.

Mr. Benton Childers, superintendent of the McClintic-Marshall Construction Company at Gatun, was the speaker at the meeting of the "Forum," held on Tuesday evening, July 1. His subject was "Natural law in the world of labor." The labor question was discussed from a scientific standpoint. A tropical quartet, Messrs. Ross, Dickson, Newbold, and Case, sang several numbers, and Mr. Pearsall played selections on the piano.

A progressive pool tournament was conducted at the Gatun clubhouse on Wednesday evening, July 2. A match game of pool was also played between Louis DePoorter and Theodore Weidmyer of Cristobal.

A special effort is being made to build up the gymnasium class, which meets twice a week at 5.30 p. m. Those who cannot attend the class which meets at 8 p. m., are urged to join this earlier class.

The working boys defeated the schoolboys in a lively game of indoor baseball on Thursday evening, June 26. Score, 28 to 18.

CRISTOBAL.

The moving picture schedule has been changed from Monday to Friday night, July 4, on which date the moving picture show will be free to all. The program will begin at 8 p. m., and continue until 10 p. m.

On July 4, there will be free billiards and pool, and a general open house to all. Special arrangement for using the entertainment hall as a resting place is planned. There will also be an all-Isthmian, two-man team ragtime bowling tournament open to all men on the Isthmus. A bowler may enter with as many different men as he chooses. Each team of two men to bowl one game of tenpins and one game of duckpins. An entry fee of 50 cents per man will be charged for each entry. The entry fee must be paid in advance to the bowling alley manager, and entry may be made at any time during the day or evening from 8 a. m., to 10 p. m. Suitable prizes will be offered for first, second, and third places. Special prizes for high scores in tenpins and duckpins will be given for the highest scores made during the day, whether made while rolling in the tournament, or individually.

PORTO BELLO.

The Sunday school observed Children's Day on Sunday evening, June 15. Mrs. Cecil Wilkes gave a solo, in addition to the selections by the children.

A moonlight swimming party was held on Thursday night, June 19. A bonfire was lighted to assist in the illumination. Coffee and home made cake were served. About 50 participated.

At the Sunday night song service on June 22, the stereopticon was used to illustrate Henry Van Dyke's story, "The other wise man." The slides were furnished by the Rev. Carl H. Elliott of Cristobal.

An interesting program was given on Friday night, June 28, wholly by home talent, as follows: A talk, by Mr. H. E. Spangler on "Love;" who, in addition, sang a solo, and gave a clog dance; vocal selections, "In the garden of my heart," and "A Japanese love song," by Mrs. James Murray, accompanied by Mrs. S. G. Allen; jig, by Mr. C. M. Chase, accompanied by Mrs. Joseph Mackintosh on the piano; doll drill, by the children of the Sunday school, who had been trained by Mrs. Keene and Mrs. Wilkes; vocal selections, "Mammy's shufflin' rag;" "Honeyman;" and "Carita," by Mrs. Wilkes; clog dancing exhibition, by Mr. T. B. VanVoy. During the evening, moving pictures were shown, and from tables, distributed about the hall, refreshments were served. The following ladies were in charge of the booths: Ice cream and punch, Mrs. Colberg and Mrs. O'Connor; candies, Mrs. Baker, Miss Mary Fisher, and Miss Pauline Smith; cakes, Mrs. Smith and Mrs. Browne; sandwiches and hot drinks, Mrs. Hoehne and Mrs. Keene, costumed as Japanese. The ladies in charge of the tables were Mrs. Lyons, Mrs. Wilkes, Mrs. Nylen, Mrs. Coyle, and Miss Sawtelle. Messrs. Walter Thomson and Ira Lyons acted as auctioneers. The proceeds from the entertainment were turned over to the Sunday school.

Mr. W. F. Bennyhoff of Cristobal, gave a lecture

on the Panama Canal, illustrated with over 100 slides, on Sunday night, June 29.

Rainfall from June 1 to June 28, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	2.20	20	7.79
Balboa.....	2.70	20	6.95
*Mirafleres.....	2.72	15	9.32
Pedro Miguel.....	1.42	14	8.81
Rio Grande.....	1.52	11	8.04
<i>Central Section—</i>			
Culebra.....	2.57	11	9.10
*Camacho.....	1.85	11	9.60
Empire.....	3.36	7	11.34
Gamboa.....	1.47	19	7.27
*Juan Mina.....	3.19	5	8.64
Alhajuela.....	2.71	11	8.92
*El Vigia.....	1.96	3	9.45
*Gorgona.....	2.10	20	8.88
*Frijoles.....	2.70	11	8.67
*Monte Lirio.....	2.38	11	10.71
<i>Atlantic Section—</i>			
Gatun.....	1.70	1	10.63
*Brazos Brook.....	2.03	11	11.72
Colon.....	2.05	11	11.69
Porto Bello.....	1.56	3-15	8.20

*Standard rain gage—readings at 5 p. m., daily—automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., June 27.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, June 28, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia	Alhajuela	Camboa.	Gatun Lake.
Sun., June 22.....	126.5	92.8	48.5	48.5
Mon., June 23.....	126.4	92.8	48.5	48.4
Tues., June 24.....	127.0	93.0	48.5	48.4
Wed., June 25.....	126.6	93.0	48.4	48.4
Thurs., June 26.....	126.0	92.8	48.4	48.3
Fri., June 27.....	127.4	93.5	48.5	48.4
Sat., June 28.....	126.5	93.0	48.5	48.5
Height of low water to nearest foot.....	125.0	91.0	44.0	

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending July 12 1913, (75th meridian time):

DATE.	Low		High		Low.
	A.M.	P.M.	A.M.	P.M.	
July 6.....	5.02	11.15	5.15	11.40	
July 7.....	5.48	12.04	6.04		
July 8.....	12.25	6.36	12.53	6.52	
July 9.....	1.15	7.25	1.44	7.43	
July 10.....	2.05	8.15	2.48	8.38	
July 11.....	3.00	9.10	3.35	9.38	
July 12.....	3.58	10.08	4.36	10.45	

Sale of Towboat "Exotic."

OFFICE OF DEPOT QUARTERMASTER.
MOUNT HOPE, C. Z., June 21, 1913.

Sealed bids will be received at this office until 2 p. m., Tuesday, September 2, 1913, for the steel-hull, stern-wheel towboat *Exotic*, built for the Commission in 1908 by Pusey and Jones, Wilmington, Del., at an approximate cost of \$40,000.

Gross tonnage, 150; two tandem compound engines. 7-inch by 14-inch, 48-inch stroke; two horizontal tubular boilers, Mississippi River type, 44-inches by 190-inches; indicated horsepower, 70; equipped with boiler feed pumps; boat equipped with capstan, steam steering gear, etc.; retired from service in 1911.

This boat can be inspected and further particulars obtained on any working day between 7 and 11 a. m., and 1 and 5 p. m., upon application at this office; any further information desired by intending bidders at a distance will be furnished by letter on request. Right is reserved to reject any or all bids.

Bids should be addressed to the Depot Quartermaster Mount Hope, Canal Zone, plainly marked, "Proposal to purchase towboat *Exotic*, to be opened September 2, 1913."

C. NIXON,
Depot Quartermaster.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
 Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
 Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
 All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.
 Retail prices of cold storage provisions for the week beginning July 2, 1913:

FRESH MEATS.	Price
Mutton—Stewing, per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire forequarter (not trimmed, 10 pounds and over), per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Legs (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	17
Chops, per pound.....	26
Loin for roasting, per pound.....	26
Cutlets, per pound.....	30
Beef—Suet, per pound.....	15
Soup, per pound.....	2
Stew, per pound.....	8
Plate, per pound.....	9
Corned, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Chuck, roast, 3 lbs. and over, per pound.....	12
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds), per pound.....	18
Pot roast, per pound.....	19
Rump roast, per pound.....	20
Porterhouse roast, per pound.....	20
Steak, Chuck, per pound.....	12½
Round, per pound.....	13
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds) per pound.....	20
Tenderloin (Western), per pound.....	30
Pork—Loin chops or roast, per pound.....	17
Hams, fresh, per pound.....	\$20
Shoulders, fresh, per pound.....	\$17
Spare ribs, per pound.....	15
Backbones, per pound.....	15
Pigs' feet, each.....	7
Pigs' heads, ½-head.....	60
Sausage meat, fresh, per pound.....	20
MISCELLANEOUS	
Livers—Beef, per pound.....	11
Calif, each.....	60
Half, each.....	30
Steak, Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	13
Frankfurter, per pound.....	13
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	20
Pork sausage meat, per pound.....	20
Sweetbread, beef, per pound.....	40
Eggs, fresh, dozen.....	27
one-half dozen only.....	14
Bluefish, per pound.....	15
Halibut, fresh, per pound.....	15
Roe shad, each.....	75
Shad roes, pair.....	40
POULTRY AND GAME.	
Chicken—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds, each.....	1.25
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00
Fowls, each.....	1.00
Ducks, (Western, about 4½ pounds), each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	50
Rabbits, skinned, each.....	30
Ducks, blackhead, pair.....	60
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants, per pair.....	1.30
CURED AND PICKLED MEATS.	
Ham—Sugar cured, per pound.....	20
Sliced, per pound.....	22
Half, for boiling, per pound.....	21
Boiled, per pound.....	28
Hocks, per pound.....	28
Beef, salt, family, per pound.....	12
Bacon—Breakfast, whole piece, per pound.....	25
Sliced, per pound.....	26
Ham, lunch, per pound.....	32
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00
Pigs' feet, per pound.....	9
Tongues, per pound.....	18
DAIRY PRODUCTS.	
Butter—Creamery, special, per pound.....	34
Sheffield Farms, extra fancy, per lb.....	46

Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28
Cheese—Edam, each.....	1 00
Edam, tin.....	25
Parmesan, per pound.....	35
Gouda, per pound.....	30
Snappy, per cake.....	10
Milk (Certified), per bottle.....	**20
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	125
1-gallon.....	150

VEGETABLES AND FRUITS.	
Beets, per pound.....	3
Celery, per head.....	*10
Cabbage, per pound.....	3
Cucumbers, per pound.....	†7
Carrots, per pound.....	3
Cauliflower, per pound.....	†12
Egg Plant, per pound.....	10
Lettuce.....	12
Onions, per pound.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	2
Parsnips, per pound.....	3½
Parsley, bunch.....	5
Peppers, green, per pound.....	*10
Rhubarb, per pound.....	4
Squash, per pound.....	5
Turnips, per pound.....	†4
Tomatoes.....	6
Apples, per pound.....	†7
Cantaloupes, each.....	*8
Grape fruit, tropical, each.....	4
American, each.....	†10
Lemons, dozen.....	24
Limes, per hundred.....	80
Oranges, Jamaican, per dozen.....	†18
Watermelons, each.....	40

*Indicates reduction from last list.
 **Indicates 5 cents allowed for return of bottle.
 †Indicates advance on last list.
 ‡Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock, next lightest weight is supplied and refund note sent for difference.
 §Sold only from commissaries; no orders taken for delivery.
 §Not less than half of a fresh ham or shoulder will be sold.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, and Panama Railroad Company arrived at the ports of Cristobal and Colon, during the week ending June 28:

Pastores, June 22, from New York, with 315 coils manila rope, 526 sacks oats, 10 barrels pipe-fittings, 4 cases brass goods, for stock; 397 packages structural steel, for Panama Railroad Company.

Karl Schurz, June 23, from New York, with 15 cases paper, 10 cases hardware, for stock.

Parismina, June 23, from New Orleans, with 1,756 pieces lumber, 64½ packages castings, for Mechanical Division, 365 pieces cross-ties, 199 pieces piling, 180 bales hay, 3,772 pieces lumber, for stock.

Snestad, June 25, from Baltimore, with 224 cases blasting caps, 400 kegs white zinc, 800 cases turpentine, 252 pieces clay pipe, 400 barrels sulphate alumina, for stock; 175 pieces ash lumber, for Mechanical Division; 270 kegs bolts and rivets, 470 pieces steel plates, for Second Division; 180 tons structural steel, for Panama Railroad Company; 804 tons structural steel, for emergency dams; 1,411 tons structural steel, for Balboa shops buildings.

Metapan, June 25, from New York, with 7 bales cordage, for stock; 11 pieces steel plates, for Sixth Division; 160 packages structural steel for Panama Railroad Company; 12 cases paint, 4 crates ladders, for stock; 5 reels cable, for First Division.

Turrialba, June 26, from New Orleans, with 930 bales hay, 86 pieces piling, for stock; 1,100 pieces lumber, for Mechanical Division.

Allianca, June 24, from New York, with 220 drums paint, 24 cases paint, 241 pigs lead, 60 cases lubricating oil, 254 pieces galvanized pipe, 205 cases water coolers, 334 bundles roofing iron, 40 kegs washers, 55 bundles shovels, 250 kegs spikes, 500 pieces bar iron, 134 pieces steel plates, for stock; 1,883 pieces pig iron, 35 packages castings, 28 kegs bronzeite, for Mechanical Division; 1,200 pieces structural steel, 250 cases electrical material, for First Division; and a miscellaneous cargo, the whole consisting of 6,040 packages, weighing 375 tons.

Ancon, June 27, from New York, with 725 bundles tie plates, 2,888 pieces steel plates, 225 kegs bolts, 24 crates valves, for stock; 100 pieces steel plates, for Second Division; and a miscellaneous cargo, the whole consisting of 4,075 packages, weighing 5,000 tons.

Lost—On June 18 between Corozal pumping station and Corozal hotel, or Y. M. C. A. clubhouse, pair of gold rimmed spectacles, in case. Finder is requested to return the article to W. R. Reese, house No. 260, Ancon, or engine No. 304, Pedro Miguel.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Colon.....	P. R. R. Thursday.....	June 26
Advance.....	P. R. R. Wednesday.....	July 2
Panama.....	P. R. R. Tuesday.....	July 8
Allianca.....	P. R. R. Monday.....	July 14
Colon.....	P. R. R. Saturday.....	July 19
Advance.....	P. R. R. Saturday.....	July 26
Panama.....	P. R. R. Friday.....	Aug. 1
Allianca.....	P. R. R. Thursday.....	Aug. 7
Colon.....	P. R. R. Tuesday.....	Aug. 12
Advance.....	P. R. R. Tuesday.....	Aug. 19
Panama.....	P. R. R. Monday.....	Aug. 25
Allianca.....	P. R. R. Saturday.....	Aug. 30

CRISTOBAL TO NEW YORK.

Colon.....	P. R. R. Tuesday.....	July 8
Advance.....	P. R. R. Monday.....	July 14
Panama.....	P. R. R. Sunday.....	July 20
Allianca.....	P. R. R. Saturday.....	July 26
Colon.....	P. R. R. Thursday.....	July 31
Advance.....	P. R. R. Thursday.....	Aug. 7
Panama.....	P. R. R. Wednesday.....	Aug. 15
Allianca.....	P. R. R. Tuesday.....	Aug. 19
Colon.....	P. R. R. Sunday.....	Aug. 24
Advance.....	P. R. R. Sunday.....	Aug. 31

NEW YORK TO COLON.

Zacapa.....	U. F. C. Wednesday.....	June 25
Emil L. Boas.....	H.-A. Saturday.....	June 28
Sixaola.....	U. F. C. Saturday.....	June 28
Almirante.....	U. F. C. Wednesday.....	July 2
Prinz Joachim.....	H.-A. Saturday.....	July 5
Carrillo.....	U. F. C. Saturday.....	July 5
Trent.....	R. M. Saturday.....	July 5
Santa Marta.....	U. F. C. Wednesday.....	July 9
Carl Schurz.....	H.-A. Saturday.....	July 12
Pastores.....	U. F. C. Saturday.....	July 12
Metapan.....	U. F. C. Wednesday.....	July 16
Magdalena.....	R. M. Saturday.....	July 19
Tivives.....	U. F. C. Saturday.....	July 19
Prinz August Wilhelm.....	H.-A. Saturday.....	July 19
Zacapa.....	U. F. C. Wednesday.....	July 23
Emil L. Boas.....	H.-A. Saturday.....	July 26
Sixaola.....	U. F. C. Saturday.....	July 26

COLON TO NEW YORK.

Metapan.....	U. F. C. Thursday.....	July 3
Prinz August Wilhelm.....	H.-A. Tuesday.....	July 8
Tivives.....	U. F. C. Tuesday.....	July 8
Magdalena.....	R. M. Tuesday.....	July 8
Zacapa.....	U. F. C. Thursday.....	July 10
Emil L. Boas.....	H.-A. Tuesday.....	July 15
Sixaola.....	U. F. C. Tuesday.....	July 15
Almirante.....	U. F. C. Thursday.....	July 17
Prinz Joachim.....	H.-A. Tuesday.....	July 22
Carrillo.....	U. F. C. Tuesday.....	July 22
Danube.....	R. M. Tuesday.....	July 22
Santa Marta.....	U. F. C. Thursday.....	July 24
Carl Schurz.....	H.-A. Tuesday.....	July 29
Pastores.....	U. F. C. Tuesday.....	July 29

NEW ORLEANS TO COLON.

Abangarez.....	U. F. C. Saturday.....	June 28
Heredia.....	U. F. C. Wednesday.....	July 2
Atenas.....	U. F. C. Saturday.....	July 5
Parismina.....	U. F. C. Wednesday.....	July 9
Turrialba.....	U. F. C. Saturday.....	July 12
Cartago.....	U. F. C. Wednesday.....	July 16
Abangarez.....	U. F. C. Saturday.....	July 19

COLON TO NEW ORLEANS.

Turrialba.....	U. F. C. Thursday.....	July 3
Cartago.....	U. F. C. Saturday.....	July 5
Abangarez.....	U. F. C. Thursday.....	July 10
Heredia.....	U. F. C. Saturday.....	July 12
Atenas.....	U. F. C. Thursday.....	July 17
Parismina.....	U. F. C. Saturday.....	July 19

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays at 3 p. m.; ships for New York via Kingston on Tuesdays at 1.30 p. m. and Thursdays at 1.30 p. m.; for Bocas del Toro on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m. and for Limon direct, Tuesdays at 3 p. m.

Hamburg-American steamers sail for New York, via Kingston and Santiago de Cuba, on Tuesdays; the *Prinz Joachim* and *Prinz August Wilhelm* at 10 a. m. and the *Emil L. Boas* and *Carl Schurz* at 2 p. m.

Sailing of the "Ancon."

The sailing of the *Ancon* has been set for Sunday, July 6, at 3 p. m., from Pier 11.

CANAL



RECORD

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Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Removal of Public Buildings at Gorgona.

The Commission clubhouse at Gorgona will be closed about August 1, after which it will be taken down and moved to Pedro Miguel. The site upon which it will stand has not yet been decided upon. The clubhouse was opened in June, 1912, when 433 men were enrolled. The fire and police stations will be dismantled shortly and moved to Pedro Miguel; the commissary will be moved there about August 1. It will be erected on the east side of the Panama railroad, about a hundred yards south of the Pedro Miguel station.

The postoffice will be taken down and re-erected at Balboa. A temporary postoffice will be established in one of the other vacated buildings, pending the final abandonment of the town.

Steel and Concrete Contract for Cristobal Terminals.

The Central American Construction Company, Ltd., entered into contract with the Panama Railroad Company, on June 30, for the erection of steel work and concrete walls and roofs for Docks 15 and 16 at the Cristobal terminals. The contractor is to complete the 918 feet of shed covering the north end of Dock 16 within 152 days from the date of contract, and all of the work in the contract, comprising principally the shed for Dock 15, by April 1, 1914, for \$201,000. Under a prior bid the contractor proposed to do the work on Dock 16 within 120 days, and all of the work in the contract by February 15, 1914, for \$211,000. These were the lowest bids submitted, the others being: R. W. Hebard and Company, \$230,000; Lombard and Company, \$232,952.26; W. E. Weigle, \$239,800.

All of the steel frame for the 918 feet of shed on Dock 16 has been erected and riveted by the Panama railroad. It has purchased the balance of the structural steel for the framework, which is now being delivered by the

United States Steel Products Company. The part of the contractor will be erection. Mr. John H. Lloyd has been awarded a sub-contract for the electrical work, including installation of telephone equipment.

Change in Designation of Canal Rolling Stock.

A change in the designation of cars, and other rolling equipment, assigned to the various divisions of Canal work has been made necessary by the abolition of the Pacific Division, and the creation of the Second, Fifth, and Sixth Divisions. The letter "P" enclosed in a diamond, signifying Pacific Division, will be replaced by the figures "2", "5," and "6". The authorized designations of rolling stock, excavation equipment, and hand and push cars in the service of the various divisions, and of the contractors, as of July 1, 1913 is, as follows:

Atlantic Division, diamond enclosing letter "A;" Central Division, diamond enclosing letter "C;" assistant engineer, Balboa terminals, Second Division, diamond enclosing figure "2;" resident engineer, Fifth Division, diamond enclosing figure "5;" resident engineer, Sixth Division, diamond enclosing figure "6;" Fortifications Division, diamond enclosing letter "F;" superintendent of erection, Canal locks, diamond enclosing letter "E;" Mechanical Division, diamond enclosing letter "M;" I. C. C. cars in the service of the Panama railroad, yellow disc; I. C. C. cars in the service of the McClintic-Marshall Construction Company, "M. M. C. Co.;" I. C. C. cars in the service of the United States Steel Products Company, "U. S. S. P. Co."

Head Tax Not Applicable to Canal Employees.

An order of the Republic of Panama requiring tickets for steamers outbound from Colon to be viséd by the governor of the province, was recently made the subject of protest by the Department of Civil Administration. The Republic of Panama collects a tax on each outward ticket, but as employees of the Isthmian Canal Commission and Panama Railroad Company are not subject to such tax, it was held that the order subjects them to unnecessary inconvenience. The department represented that the official request for reduced transportation is sufficient proof that the holder of the ticket is an employee of the Commission or railroad, and this has been acceded by the Secretary of Finance of the Republic.

Installation of New Cable.

On a work request from the Central and South American Telegraph Company, forces of the Fifth Division have installed four fibre conduits beneath the street paving from the office of the company on Central Avenue, Panama, to the foot of Eleventh street, a distance of about a thousand feet. The company's local construction gang has drawn cables through to supplant those suspended

from poles in the street. A marine cable has been laid from the foot of the street across the tidal flats to the landing hut at Punta Mala; altogether, about 15 miles of aerial cable are to be removed. Along with this work the company has made the local connections with a new line direct to Santa Elena, its landing station near Guayaquil. The cable ship *Stephan* left Panama Bay on May 27, paying out cable at the rate of seven knots an hour. It arrived at Santa Elena on June 3. The new line, 771 nautical miles in length, has been tested and placed in service, paralleling the original line between Panama and Santa Elena, which touches at several intermediate points along the coast.

Reoccupation of Empire Shops.

In preparation for the work to be done at Empire shops during the transfer from Gorgona to the permanent buildings at Balboa, the Empire shops are being put in repair for an occupation of about three months, beginning the first of August. The wood floor in the machinery and erecting shops, as well as the galvanized iron roofing for these buildings and the boiler and blacksmith shops, are being repaired, and the equipment is to be augmented by the transfer of two steam hammers, a flue rattler, and certain milling machines, planers, air-brake equipment and locomotive cranes.

Tug Changes at Balboa Harbor.

Following the transfer of the tug *Bolivar* from harbor service at Balboa to general towing service in connection with the dredging in the Pacific entrance, it has been decided to transfer the fire pump on the *Bolivar* to one of the clapnets of the Sixth Division fleet. The tug *Cocoli*, which the *Bolivar* will replace temporarily, has been sent to the marine shops at Balboa for overhauling. A new boiler, due to arrive from the United States early in July, will be installed, in connection with a system for utilizing crude coal oil for fuel.

Cofferdam for Dry Dock Excavation.

The first trainload of rock to be placed in the construction of the cofferdam, for completing the excavation for the dry docks at Balboa in the dry, was dumped on July 5. The large docks and its approaches are to be excavated to a depth of 45 feet below mean sealevel, and a large part of the site of the approaches is at present under water. The completion of the cofferdam will allow the area to be pumped out, and made accessible to steamshovels.

The cofferdam is to extend from the southwest end of the sand wharf, opposite the Sixth Division's floating landing for small launches and pangas, to the site of the old coal wharf of the Panama railroad. It follows an approximately elliptical curve, about 1,350 feet long, subtended by the present shore line. Its construction consists essentially of two

railway trestles, separated by a distance of 15 feet between inside rails, between which will be dumped a core of earth, to be armored with rock dumped outside the trestles. The driving of trestle began on April 2, from the sand wharf. It is now almost completed, with a piledriver working outward from the other end; a gap of 100 feet will be left as long as practicable, to allow the passage of vessels to the shipways and repair shop of the Sixth Division.

This construction has necessitated the removal of the old coal wharf and the construction of a new pocket beyond the site of the cofferdam. The new pocket was erected on the site of the wharf which collapsed on August 17, 1912, when the steamship *Newport* sank. The dredging landing was also moved, to a point just east of the new coal pocket.

Concrete Work in Locks and Spillways.

Concrete work in the Canal Locks is nearly completed, the aggregate amount in place at the close of work on July 5 being, 4,467,097 cubic yards.

A statement of the concrete laid in the three sets of locks for the Canal, and in Gatun and Miraflores spillways, as of July 5, follows:

GATUN LOCKS.

	Concrete laid.
June 30.....	54
July 1.....	40
July 2.....	36
July 3.....	72
July 5*.....	24

Total..... 226
Previously reported..... 2,041,123

Grand total..... 2,041,349

PEDRO MIGUEL LOCK.

June 30.....	53
July 1.....	70
July 2.....	91
July 3.....	60
July 5.....	63

Total..... 337
Previously reported..... 921,403

Grand total..... 921,740

MIRAFLORES LOCKS.

June 30.....	83
July 1.....	46
July 2.....	4
July 3.....	4
July 5.....	4

Total..... 137
Previously reported..... 1,503,871

Grand total..... 1,504,008

GATUN SPILLWAY.†

June 30.....	98
July 1.....	76
July 2.....	92
July 3.....	92
July 5.....	42

Total..... 400
Previously reported..... 228,742

Grand total..... 229,142

MIRAFLORES SPILLWAY.

June 30.....	392
July 1.....	269
July 2.....	276
July 3.....	215
July 5.....	141

Total..... 1,293
Previously reported..... 65,795

Grand total..... 67,088

*July 4—Holiday.

†Includes hydroelectric station.

Squatters on Canal Zone Lands.

A notice to squatters occupying lands in the Canal Zone, which have been adjudicated by the Joint Land Commission, is being prepared by the General Counsel of the Canal Commission. It will advise the occupants of these lands to move their buildings within a certain date, or else they will be destroyed

by the Commission. It will also warn them not to settle on any other lands in the Canal Zone, as such are declared to be reservations within the meaning of the Executive Order of the President of the United States, dated April 17, 1912. These notices will be posted by the police at different points on the lands in question.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry for the two weeks ending July 5:

DATE.	Cubic yards.	Hours worked
June 23.....	3,387	10.05
June 24.....	3,582	10.25
June 25.....	3,275	9.55
June 26.....	3,313	10.10
June 27.....	2,309	7.25
June 28.....	2,487	8.55
Total.....	18,353	56.55
June 30.....	2,253	8.15
July 1.....	2,734	10.05
July 2.....	3,060	7.15
July 3.....	2,388	6.30
July 4 (Holiday).....		
July 5.....	2,804	9.50
Total.....	13,239	42.00

Patriotic Service at Gatun.

A patriotic service was held at the Commission chapel, Gatun, on Sunday evening, June 29, in honor of Independence Day. A program of music was rendered by the church choir, a flag drill was executed by the members of Mrs. Purdy's Sunday school class, and Mr. W. B. Childers delivered an appropriate address.

Immigration to the Isthmus During June.

According to the figures of the quarantine service, the number of persons who landed at the port of Colon from foreign ports during the month of June was 4,672, consisting of 1,606 cabin, and 3,066 steerage passengers. The number of persons who embarked for foreign ports during the same period was 4,090, consisting of 1,807 cabin, and 2,283 steerage passengers. The number of persons who landed over those who embarked was 582. Two thousand one hundred and sixty-eight of the persons arriving in steerage were from Jamaica and other West India islands; 569 were from Colombia, and 106 from Costa Rica. The passengers arriving "in transit" numbered 1,328, consisting principally of people bound for the west coast of South America, and tourists. This number is 224 less than for the month of May. Eighty-eight vessels arrived at Colon during June, as compared with 109 for May.

The number of persons who landed at the ports of Panama and Ancon during the month from foreign ports was 649, consisting of 462 cabin, and 187 steerage passengers. The number of persons who embarked for foreign ports was 655, consisting of 422 cabin, and 233 steerage passengers. The number who embarked over those who landed was six. The net immigration to the Isthmus during June was 576.

Fatal Accident at Porto Bello.

Ruperto Duvesa, a white Spaniard, check No. 14217, employed by the Atlantic Division at Porto Bello, was struck on the head by a rock from a quarry blast at about 6.45 a. m., Tuesday, July 1, and instantly killed.

STEAMSHOVEL RECORDS.

Work of Central Division Machines During the Month of June.

During the month of June, the total amount of material excavated in the Central Division was 878,300 cubic yards, of which 821,026 cubic yards were excavated by Central Division forces, and 57,274 cubic yards were removed by sluicing at Gold Hill, the latter work being in charge of the Fifth Division of the Chief Engineer's Office. Of the amount removed by the Central Division, 258,740 cubic yards were classified as earth, and 562,286 cubic yards as rock.

Of the total, 862,383 cubic yards were primary excavation for the Canal, 2,900 cubic yards were from ditch for draining the old Culebra dump, and 13,017 cubic yards were classified as plant excavation. Eight hundred and twenty-one thousand and twenty-six cubic yards were removed by steamshovels.

The high record for the month was made by shovel No. 256, working 37 days in the Empire district, which excavated 36,800 cubic yards of rock.

The second best record for the month was made by shovel No. 262, working 37 days in the Empire district, which excavated 36,280 cubic yards of rock.

The best record for a shovel of the 70-ton class was made by shovel No. 122, working 24½ days in the Culebra district, which excavated 26,089 cubic yards of earth.

Shovel No. 208, working in the Culebra district, made a high record for one day by excavating 1,976 cubic yards of rock on June 4.

Shovel No. 256, working on 12-hour shift in the Empire district, made a high record of 2,574 cubic yards of earth on June 26.

Except where noted, monthly reports are computed on place measurement, while the daily reports are based on car measurement. The best records for the month and for one day are shown in the following table:

BEST RECORDS FOR THE MONTH.

SHOVEL No.	CULEBRA DISTRICT.			No. of days at work.
	Earth.	Rock.	Total.	
230.....	25,130	10,770	35,900	36
206.....	17,550	17,550	35,100	35
208.....	26,672	8,000	34,672	25

SHOVEL No.	EMPIRE DISTRICT.			No. of days at work.
	Earth.	Rock.	Total.	
256.....	36,800	36,800	73,600	37
262.....	36,280	36,280	72,560	37
221.....	28,547	28,547	57,094	21½

BEST RECORDS FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
215	Empire...	June 26	Rock.....	1,919
214	Empire.....	June 26	Rock.....	1,830
227	Empire.....	June 17	Rock.....	1,726
208	Culebra.....	June 4	Earth.....	1,976
229	Culebra.....	June 19	Rock.....	1,881
208	Culebra.....	June 3	Earth.....	1,805

The excess number of days over and above the actual number of working days in the month of June (25), is due to double-shift and night work.

Work of Lidgerwood Unloaders in June.

During the month of June, the following Lidgerwood trains and cars were unloaded by the Central Division.

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa.....	4	946	18,920
Miraflores.....	1	147	3,087
Gamboa.....	4	778	16,338
Total.....	9	1,871	38,345

SOCIAL LIFE OF THE ZONE.

Gatun Sunshine Society Disbands.

The Gatun Sunshine Society held its final meeting and disbanded on Monday, June 16. The records were ordered burned, and the total amount in the treasury, \$55, was forwarded to the international headquarters in New York to be applied to the fund for the carrying on of the Gatun dormitory in the Arthur Home for Blind Babies at Summit, New Jersey. The closing of this society marks the end of the activities of one of the oldest organizations of women in the Canal Zone. The Sunshine Society was organized in September, 1907, and affiliated with the international organization in the same year. Its work, covering a period of five years and nine months, has been concentrated on the blind babies work in the United States. It has equipped and maintained a dormitory in the Arthur Home, its entire expenditures for this purpose being more than \$1,500. The society's activities have been confined to a few months in each year, although annual dues were paid by the members. Money has been raised by "Sunshine teas," which were pleasant social features, as well as a profitable means of adding to the treasury; apron and fancy work sales; dances and suppers. One year a baby show was held. Members have contributed personal work by sewing for families at 25 cents an hour, the amount thus earned being placed in the treasury. The largest membership since its organization was 45. The closing of the Sunshine Society has been deemed a wise step in view of the expected changes in the Canal force during the coming year.

Ancon Study Club.

At the meeting of the Ancon Study Club on Thursday, July 3, the semiannual election of officers was held, the following being chosen: President, Mrs. H. C. Shick, reelected; secretary, Mrs. E. L. Luce; librarian, Mrs. Mark White, reelected, with Mrs. Johnson McDonald as assistant. A General Federation secretary was added to the officers, and Miss J. Macklin Beattie was chosen for the office. The meetings for the remainder of the month will be held at the home of Mrs. Anson Mason, House 26, Tivoli district.

Colon Humane Society to Continue.

A special meeting was held by the Colon Humane Society on June 17, for the purpose of determining the advisability of dissolving the organization, because of lack of interest displayed by the members. Examination of the books, however, showed a satisfactory number of active members, and it was decided that efforts should be made to continue the work of the society. The municipal council of the city of Colon was urged to ask the humane agent, who is a member of that body, to cooperate with the work of the society.

Church Notes.

The Gatun Christian League held its business meeting with an election of officers on Thursday evening, June 26. The Rev. C. O. Purdy was elected chaplain to the league for the ensuing six months. The following were chosen as officers: President, C. O. Jones; vice-president, Edward Duckworth; secretary, C. E. Wood; treasurer, W. E. Wells.

The chaplain's duty at Ancon hospital was taken by the Rev. A. A. Nellis of Empire from June 29 to July 5; from July 6 to July 12, the

charge will be assumed by the Rev. J. L. Wise of Gorgona, and during the week ending July 19, the Rev. S. Moss Loveridge will be the acting visiting chaplain. Services at St. Luke's Hospital chapel on Sunday, July 13, will be conducted by the Rev. Edward J. Cooper, rector of Christ Church, Colon.

The second in the series of monthly euchre parties in the parish house of St. Ferdinand's Church, Empire, under the auspices of the altar society, will be held on Saturday evening, July 12. Attractive prizes will be given and there will be music and refreshments. Tickets are on sale at 50 cents each.

Prison Library.

The Chief of Police has authorized the construction of bookcases for the penitentiary library at the Gamboa stockade. The books have been catalogued alphabetically, by both titles and authors, and copies of these lists have been placed in the cells for the convenience of the prisoners in selecting books and to encourage their use of the library. The library was established in January, 1910, through the efforts of a prison relief committee which was organized at Culebra during the previous year. One hundred and ninety-three books were purchased from the New York Navy Yard, and 97 were selected from a publisher's catalogue. Thirty books have recently been donated by the Ancon Study Club.

Visit of Shriners.

Osman Temple, Ancient Arabic Order, Nobles of the Mystic Shrine, of St. Paul, Minnesota, will make a pilgrimage to the Isthmus for the purpose of initiating a class of candidates. The party, which will include Shriners from other parts of the United States, is expected to arrive at Colon on August 28, and the ceremony of initiation will be held on Labor Day, September 1. The imperial potentate of the order will probably accompany the party.

Roster of Masons.

A souvenir roster of Masons engaged in the construction of the Canal is being compiled under the auspices of the Masonic Club of Empire. This will show an alphabetical roster of all Master Masons, the name, number, and location of the lodge of which each is a member, and will also contain a roster of members of all Masonic bodies on the Isthmus. Application blanks will be ready for issue within the next week, and may be obtained on application to John I. Major, president, Masonic Club, Empire, Box 105.

Fourth of July Events.

Rain, which began during the lunch hour at the Independence Day celebration at Cristobal, kept many visitors from witnessing the afternoon events, and to some extent interfered with the fireworks display in the evening. There was an unusually large crowd from the Canal Zone towns. Dock No. 16, where most of the people congregated to see the various events and the patriotic exercises, the police and fire stations, clubhouse, and Commission hotel, were effectively decorated. Canvass spread over a part of Dock 16, together with the sightseeing cars alongside the dock, afforded shelter to the people during the rain. For the children the merry-go-round was the center of attraction throughout the day. The program was carried out practically as printed in THE CANAL

RECORD. Following are the winners of the various athletic and aquatic events, as well as the fire company contests:

FIELD EVENTS.

100-yard hurdle—J. N. Kenealy, Corozal; R. A. Koperski, Culebra; W. F. Mathues, Cristobal. Time, 13 seconds.

Shot-put—C. O. Herring, Gorgona; J. R. Scheel, Camp Elliott; F. G. Miller, Empire. Distance, 45 feet, 11½ inches.

880-yard run—K. Scherzberg, Ancon; W. F. Mathues, Cristobal; J. C. Russell, Ancon. Time, 2 minutes, 11 1/5 seconds.

Running high jump—J. R. Scheel, Camp Elliott; R. A. Koperski, Culebra; B. Robinson, Gorgona. Distance, 5 feet, 3 inches.

100-yard dash—H. S. Warner, Corozal; C. O. Herring, Gorgona; D. Whitver, Cristobal. Time, 10 4/5 seconds.

440-yard run—D. T. Edwards, Ancon; H. D. Simons, Camp Elliott; J. W. Harper, Camp Elliott. Time, 51 seconds.

Running broad jump—E. I. Baldwin, Camp Elliott; C. O. Herring, Gorgona; F. W. Hoff, Ancon. Distance, 19 feet, 10½ inches.

Pole vault—G. A. Barcroft, Toro Point; J. G. DeCora, Culebra; G. W. Rose, Culebra. Distance, 10 feet.

220-yard dash—H. S. Warner, Corozal; C. O. Herring, Gorgona; B. Robinson, Gorgona. Time, 26 2/5 seconds.

Marathon—K. Scherzberg, Ancon; J. C. Russell, Ancon; A. A. Simka, Cristobal.

One mile relay—United States Marine Corps; Corozal; Culebra.

Boys' 75-yard dash—A. Farrell, Cristobal; A. Roe, Ancon; C. P. Grey, Gatun.

Potato race—D. V. Raymond, Cristobal; W. Fraser, Cristobal; A. Farrell, Cristobal.

Wall scaling—United States Marine Corps.

Tug-of-war—Tenth Infantry.

Boys' relay—Ancon; Gatun.

Mr. C. O. Herring won the trophy for scoring the greatest number of individual points in the athletic meet, with 14 points.

AQUATIC EVENTS.

Event No. 1—Sailing canoe race. First, L. D. Simons.

Event No. 2—Sailboat race. First, J. E. Welch.

Event No. 3—Lifeboat race. First, U. S. LaValley; second, U. S. Bohio.

Event No. 4—Navy steam cutter race. First, launch Mary S.

Event No. 5—Gasoline boat race. First, launch Lirio.

Event No. 6—Gasoline boat race, free for all. First, launch Manzaniello.

Event No. 7—Paddling canoe race. First, J. C. Moons and W. L. Brown; second, M. J. Tuttle and A. B. Forsstrom; third, L. D. Simons and E. C. Dazeveado.

Event No. 8—Tugboat race. Not run.

Event No. 9—50-yard swimming dash for men. First, R. Nelson; second, D. Simons; third, W. Greene.

Event No. 10—Fancy diving for men. First, L. H. France; second, J. M. Jimenez; third, F. E. McEwen.

Event No. 11—50-yard tub race. First, W. Fraser; second, N. Giavelli.

Event No. 12—Aquatic wrestling match. First, R. Nelson.

Event No. 13—Swimming race for men. First, W. Greene; second, J. E. McGrath; third, W. H. McCarthy.

Event No. 14—50-yard swimming race for women. First, Harriett Crafts; second, Harriet U. Keenan; third, Gabrielle Butler.

Event No. 15—100-yard swimming race for men. First, J. E. Carpenter; second, D. C. Galloway; third, N. Giavelli.

Event No. 16—60-foot form dive. First, R. Nelson; second, J. J. McGrath; third, H. Aldrich.

Event No. 17—Upset canoe race. W. Fraser, first; J. Raymond, second.

Event No. 19—50-yard swimming race for boys. First, S. Carpenter; second, C. P. Gray; third, H. Wardlaw.

The winner of event No. 20, the relay swimming race, has not yet been decided.

WINNERS IN VOLUNTEER FIRE DEPARTMENT CONTESTS.

1. 125-yard run to hydrant, laying hose, etc., and getting water; Won by Gatun Company, No. 2. Time, 38 seconds.

2. Laying four parallel lengths of hose, making running connections, straightening line, and getting water; Won by Gatun Company, No. 2. Time, 19 seconds.

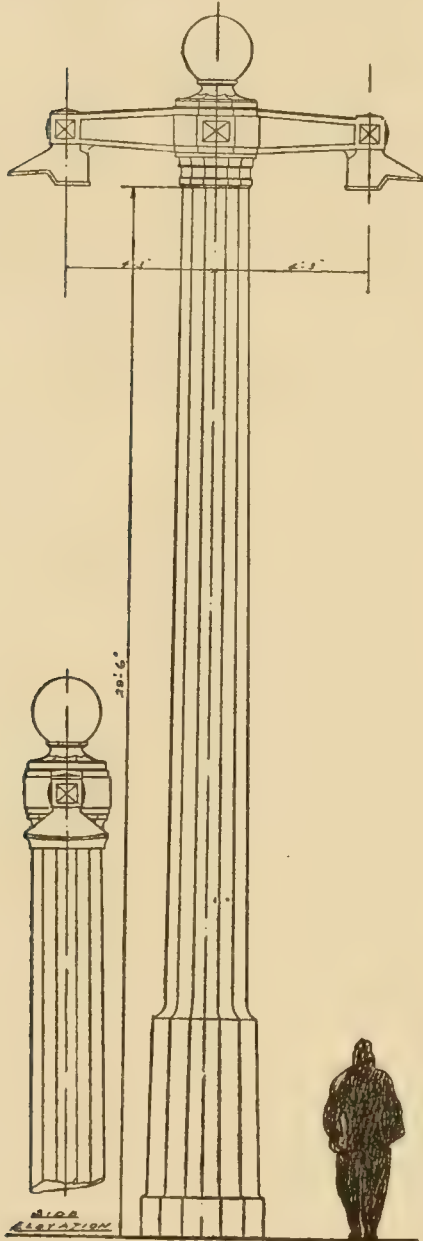
3. Replacing length of hose in second section of a charged line with one taken from cart; Won by Gatun Company, No. 2. Time, 20 seconds.

The result of the tennis tournament will be announced as soon as the finals in doubles and the finals in singles, consolation, are played off.

CONCRETE LAMP BRACKETS.

Amended Type, for Use in Illuminating Canal Locks, Approved.

An article on the system of lighting for the Canal locks was published in THE CANAL RECORD of January 8, 1913, together with sketches showing type of lamp standard, bracket, and reflectors; and the general scheme of illumination. Since then, an amended design for the concrete brackets to



LAMP STANDARD AND BRACKET.

support the concrete lamp reflectors, as shown in the accompanying sketch, has been approved.

The accepted design was worked out by Mr. M. J. Schiavoni, the assistant architect of the Canal Commission, and answers the criticisms of the Fine Arts Commission. The model made according to the original drawings, now on the locks at Gatun, will be replaced with the new type, which shows the concrete arm or bracket supporting the two reflectors, spaced four feet three inches on centers.

The entire bracket, reflectors, and ball finial will be of reinforced concrete cast in iron

forms manufactured at Gorgona shops, from drawings furnished by the Lighthouse Subdivision, which will also fabricate the concrete brackets, 511 in number, consisting of 302 single arm, and 307 double arm brackets. Each concrete double arm bracket and reflectors will weigh approximately 1,610 pounds, and the solid ball finial, weighing 730 pounds, will be employed to counterbalance the weight of the single arm brackets on the middle locks.

Corrections and Additions to Medal and Bar Lists, for 1912.

A list of corrections and changes to be made in the service medal and bar lists recently published in THE CANAL RECORD is given below:

I. C. C. MEDALS—ISSUE OF APRIL 23, 1913.

Kundall, John C., January 8, change to Kendall, John C.
Harvey, Walter S., January 15, change date to January 16.
LeSassier, Charles, January 21, change to Le Sassier, Charles.
Hollin, Alexander, February 10, omit (Alien).
Grojean, Eugene E., February 16, omit (Alien).
Emmet, Eugene, March 13, change to Emmett, Eugene.
Yomey, William N., March 13, change to Tomey, William N.
Berglund, Nils G., April 16, add name to list.
Burford, Earl, May 4, change to Burford, Earl L.
Schwalenberg, Henry J., May 9, add name to list.
Nichel, John, May 31, change to Michel, John.
Harfield, Benjamin G., June 27, change to Harfield, Benjamin G.

ISSUE OF APRIL 30, 1913.

Wilkins, Rinard B., July 15, add name to list.
Cannon, Carl E., August 11, omit, on P. R. R. list.
de Montell, Oscar, August 25, add name to list.
Hallin, Frank W., October 10, omit (Alien).
Borgen, Alexander W., October 11, change date to October 13.
Sherbourne, Walter F., November 10, change to Sherburne, Walter F.
Surprenant, Rolland W., November 15, add name to list.
Keller, Theodore, November 19, omit (Alien, correct name R. W. T. Keller).

ISSUE OF MAY 7, 1913.

White, Clarence A., November 24, change date to May 24.

Stephos, Nicholas C., December 1, add name to list.

FIRST BARS—ISSUE OF MAY 14, 1913.

Merritt, Henry F., January 2, add name to list.
Caruthers, Albert B., January 26, change date to January 27.
Akins, Carl C., February 3, add name to list.
Hollowell, Cooper, March 10, add name to list.
DePew, Jasper H., March 15, change to De Pew, Jasper H.
Phipps, John H., March 25, add name to list.
Vickerey, Wm. J., March 30, change to Vickery, Wm. J.
Hugblings, S. D., April 18, change to Hughlings, S. P.
Howe, Wm. H., April 13, omit (Alien).
Macfarlane, James, May 19, add name to list.
Bonnell, Leander P., May 21, change date to May 25.
Devol, Carroll A., June 30, add name to list.
Hodges, H. F., July 15, add name to list.
Carson, Arthur, July 16, omit (duplication).
Morton, Brett A., August 4, add name to list.

ISSUE OF MAY 21, 1913.

Darrow, Samuel P., add name to list.
Louner, Edward, August 17, add name to list.
Whitlock, Frank O., October 8, add name to list.
Britten, Cyrus C., October 13, add name to list.
Collins, John O., November 11, change date to May 5, 1910.

West, William J., November 13, add name to list.

ISSUE OF JUNE 4, 1913.

Vanderburgh, C. L., February 5, change to Vanderburgh, C. L.
Bentley, Enoch W. A., February 22, change to Bentley, Enoch A.
Kimball, Melvin J., March 23, add name to list.
Major, John I., May 11, add name to list.
Cosgrove, James, June 9, add name to list.
Morley, John E., June 9, change to Morley, John F.
Taber, Charles S., June 24, change to Tabor, Charles S.
Pulsifer, Chase, July 14, add name to list.
Montgomery, James M., August 24, add name to list.
Major, Bessie, September 17, add name to list.
Fein, John W., October 18, add name to list.
Jones, John W., October 21, add name to list.
Stevens, Frank C., October 24, add name to list.

THIRD BARS—ISSUE OF JUNE 18, 1913.

Davis, John, May 4, add name to date.

Schuber, J. B., May 4, add name to list.

P. R. R. MEDAL LIST.

Hunter, R. B., April 23, change date to April 24.
Bernsee, W. F., September 3, change date to September 30.
Logasa, Charles, September 30, add name to list.
P. R. R. SECOND BAR LIST.
Newbold, W. R., Jr., February 2, change date to December 29.

PERSONAL.

Col. George W. Goethals returned from the United States on the steamship *Zacapa*, from New York, which docked at Colon on Wednesday, July 2.

Mr. H. H. Rousseau, accompanied by his family, returned on the *Cartago*, on Saturday, July 5, from Costa Rica, where he spent his annual leave.

Mr. T. B. Mönniche, accompanied by Mrs. Mönniche, sailed for Pedregal, the port of David, in the province of Chiriqui, on Saturday, July 5, and from there will go to the valley of Boquete, where he will spend his vacation leave.

Mr. F. A. Gause sailed for the United States on the *Colon*, on Tuesday, July 8, on his annual leave of absence.

Dr. Charles A. Hearne, quarantine officer at Colon and Cristobal, returned from his annual leave on the *Cartago*, from New Orleans, on Monday, June 30.

Mr. W. L. Thompson, formerly in charge of the sluicing operations back of Gold Hill at Culebra, resigned from the Canal service on July 2, and left for New Orleans on the *Turrialba*, on Thursday, July 3, having accepted the position of chief engineer of the Mississippi State Levee Board for the southern part of the Yazoo delta, with headquarters at Greenville. He arrived on the Isthmus on May 31, 1905, and was with the old Culebra division until it was reorganized into the Central Division in September, 1906, when he was placed in charge of excavation operations in the north part of Culebra Cut, with headquarters at Las Cascadas. This work completed, he was transferred on May 8, 1911, to the Pacific Division, and placed in charge of hydraulic operations in the vicinity of Miraflores Locks. After the suspension of this work in December, 1912, he was charged with installing a sluicing plant back of Gold Hill for removing material pressing against the slide on the east bank. The plant was installed, and began operations on June 17. Mr. W. D. Stanton, formerly assistant engineer in the Central Division, has been appointed to succeed Mr. Thompson at the sluicing plant.

European Plan Only at New Washington Hotel.

Commencing July 15, 1913, the Hotel Washington will run on European plan only. All service in dining room and restaurant will be *à la carte*.

O. F. Wood, Manager.

Married.

CALHOUN-CRESPI—On July 1, at the home of Mrs. Julia M. Frost, Cristobal, Clelia Delia, daughter of Mr. and Mrs. Albert Crespi of Brooklyn, N. Y., to Mr. Crede Haskins Calhoun of Columbia City, Ind. Canal Zone residence, Corozal.

The person who left package in Cristobal check room on July 4 can recover it by applying to C. M. Bullard, chairman, refreshment committee.

ELECTRICAL TRANSMISSION.

Distribution of Energy for Future Canal Requirements.—Construction of Main Line.

Construction work has been begun upon the permanent electrical transmission line across the Isthmus. A few foundations for the track-span bridges have been placed at New Culebra siding, on the Gold Hill relocation of the Panama railroad, and first shipments of steel for the bridges have arrived from the United States. A shed is being constructed in the abandoned borrow pit just east of Gatun Locks, for the assembling of the bridges.

The transmission line is fundamentally to transmit electrical energy from a source of generation at Gatun to load centers at Miraflores, Balboa, and Cristobal. The system is simple and straightforward. At the Gatun spillway, a portion of the lake water will be passed through turbines to generate electrical energy, as described in THE CANAL RECORD of July 3, 1912. The energy, generated at 2,200 volts, 25 cycles, three-phase, will be carried along the east wing of Gatun dam by heavy cables in duplicate underground duct-lines, and through tunnels under the locks, into a transformer substation, situated on the east side of the locks. The duct-lines are in duplicate, to insure maximum safeguard against damage in event of a burn-out of a cable in one or the other of the lines, and are to be laid approximately 600 feet apart.

At the Gatun substation, which is to be situated at the north end of the hill upon which the present Atlantic Division office building stands, the electrical energy will be transformed from 2,200 volts to 44,000 volts by means of step-up transformers. The equipment, in addition to three 2,000-kilowatt transformers, will consist of the necessary lightning arresters, oil switches, buses, control board, and other auxiliary appurtenances. Two high-tension lines will emerge from the substation and tap into duplicate transmission lines.

The transmission line will run from Cristobal to Balboa, completely across the Isthmus, permitting distribution of energy both ways from Gatun. The line is to parallel the right-of-way of the Panama railroad for its entire length. At Cristobal and Balboa will be terminal substations similar to the Gatun substation. The terminal substations will receive the energy at 44,000 volts, less the voltage drop in the line, and step-down transformers will convert the pressure to 2,200 volts, which will be the distributing voltage for all circuits. At Miraflores, a substation will be installed for supplying energy for the motors and lamps of Pedro Miguel and Miraflores Locks. If electricity is required along the line, the transmission lines will be tapped by outdoor type of transformer substation equipment. This will probably be done at Caimito, to supply electricity to the high power radio station; at Monte Lirio, to supply power to the bascule bridge, and at any permanent town or military reservation which demands electric lights and power.

At Miraflores, the present steam turbogenerators will be tied into the permanent electrical system through 2,200-volt tie-lines extending to the Miraflores substation. This steam station will serve as a reserve in the event the hydroelectric station at Gatun should break down. In emergency, energy from Miraflores will be transmitted back to Gatun and to the terminal substations at Cristobal and Balboa, insuring a continuity of service on the system

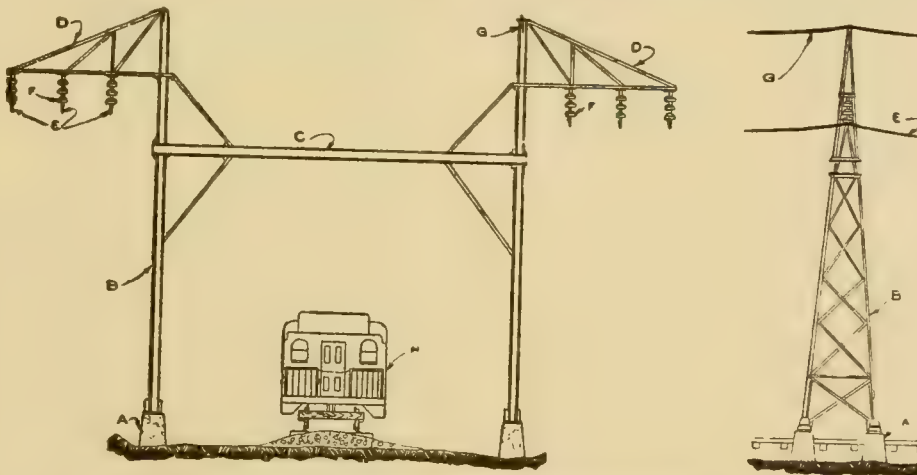
at all times. The present steam station at Gatun, which has been operated during the construction period, may be abandoned in a year or two if conditions warrant placing entire dependence upon the water power. It will, however, be tied temporarily into the system, until abandonment, and will also be required to supply energy to Gatun Locks until such time as the transmission system is fully installed.

The type of transmission line which has been adopted is illustrated in the accompanying sketch. The track-span bridge supports one of the duplicate three-phase lines upon each side of the railroad tracks. Each of the three power conductors is carried from suspension insulators attached to a side bracket. The conductors are No. 00 in size, and are five feet apart and five feet from the frame. The insulators are made of vitreous porcelain, in three units, which is ample to sustain the impressed potential of 44,000 volts. The insulator fittings are made entirely of monel metal to resist climatic corrosion. A ground wire for protection against lightning is carried at the top of each side frame. The ground wire is 5/16-inch copper-clad solid wire. The copper-clad wire is being furnished

000 feet in length. The individual strands are manufactured without either a soldered or a welded joint. Splices in the cable will be made with soft copper sleeves. The conductors are suspended at the insulators from monel metal fittings, which are bushed with a copper sleeve. Thus, in the entire length of line, there will be no point where the copper strands are in intimate contact with a second metal; this prevents the introduction of an electric couple and consequent electrolytic deterioration.

At each track-span bridge, the ground wire will be clamped to the tower, and a positive T-connection through a copper wire will be made to ground plates buried in the earth. These ground plates are being manufactured from old scrap copper and cable which have accumulated at the Empire storehouse. By frequently grounding the ground wires, it is expected that line trouble and substation burn-outs caused by lightning will be reduced to a minimum. Five hundred thousand feet of copper-clad wire are required for the two ground wires.

The insulators, which will support the conductors, are of two types, suspension and strain, each assembled of three porcelain discs, ten inches in diameter, joined by monel metal fit-



TRACK-SPAN BRIDGE, CRISTOBAL-BALBOA TRANSMISSION LINE.

Front and side elevations: A, concrete pedestals; B, side frame; C, cross bridge; D, brackets; E, three-phase transmission line; F, suspension insulators; G, ground wire; H, Panama railroad car.

with a copper sheath of nearly one-half the area of the wire, surrounding an amalgamated, carefully selected steel core.

The steel bridges are spaced on 300 foot centers, a total of 917 being required across the Isthmus. The span between side frames is 36 feet. The track-span bridge, in addition to supporting the duplicate transmission lines, admits of the suspension of a catenary trolley construction, should it prove desirable in the future to electrify the Panama railroad.

The construction adopted has several advantages for transmission purposes. By paralleling the Panama railroad, material can be brought to within a very few feet of the point of actual erection. The side bracket suspension of the conductors separates the duplicate lines so that a burn-out in one will in no manner affect the other. The conductors are outside the track and will be comparatively free from deterioration caused by smoke from the locomotives. The structure itself is fundamentally strong and is capable of easily resisting all strains introduced by breaks in the wires.

A few details of construction are worthy of note. The No. 00 copper conductors are 7-strand pure copper cables, totaling 1,500,-

tings. This metal is used on account of its unusual strength and its ability to resist corrosion; galvanized fittings which are customarily used in the United States and abroad are considered practically worthless in the Isthmian humidity. The strain insulator is to be used on sharp curves and for anchoring at intervals, and the suspension insulator is to be used upon tangents and light curves. The suspension insulator swings freely from the bracket, while the strain insulators take the position of the conductors and hold the conductors more rigidly to a line. Each wire requires two strain insulators per bridge on sharp curves, and one suspension insulator is required for each wire per bridge on tangents and light curves. Four thousand suspension insulators and 2,500 strain insulators, have been ordered for the entire line. The total weight of the copper conductors, including the ground-wires, will be approximately 400 tons.

In the design of the bridge the steel is distributed, so as most efficiently to resist the maximum stresses incurred. The side frames are A-frames, to resist uprooting of the bridge in event all wires are down in one span. The crosspiece is made of two channels, which are crossbraced to carry the longitudinal pull of

the catenary construction which may be attached if the railroad is electrified. The side brackets for supporting the line conductors are three-legged, designed both to support the weight and to resist the torsional pull of the wires. The brackets and the crosspiece are braced to the side frames, so that the entire bridge acts as a unit to resist side pull on sharp curves.

The type of concrete foundations for the track-span bridges has been given considerable study. The standard foundation will consist of two pedestals under the two legs of each side frame, the pedestals resting upon a spread slab, which latter is reinforced by scrap steel rails. Each leg of the side frame is to be secured to the pedestal through two 15-inch anchor bolts, which are clamped at the lower end to the steel rails in the spread slab. Provision for anchoring the foundations is made by extending downward long reinforcing rods, encased by concrete in a drilled hole, which latter has been sprung at the bottom with light charges of dynamite. This foundation should afford a thorough footing, both for the normal bearing and for anchorage to resist side pull when wires are broken.

Among the permanent loads which are to be placed on the transmission system, the following are tabulated:

Place.	Division.	Description.
Colon.....	Public works...	Sump pumps.
Cristobal....	Panama railroad	Docks, light and power.
Cristobal....	Subsistence....	Bakery, laundry, cold storage, ice plant, etc.
Mount Hope..	Second.....	Coal handling plant.
Mount Hope..	Public works...	Colon waterworks.
Gatun.....	First.....	Lock machinery, and lighting.
Gatun.....	Atlantic.....	Agua Clara pumping plant.
Monte Lirio..	Panamarailroad	Bascule bridge
Caimito Jct..	Navy Department.	Wireless station.
Pedro Miguel	First.....	Lock machinery, and lighting.
Miraflores...	First.....	Lock machinery, and lighting.
Miraflores...	Public works...	Water pumping plant.
Balboa.....	Second.....	Dry docks, permanent shops.

In addition to the above, all permanent towns of the Canal Zone will be supplied with electric lights, and the range and beacon lights and the Panama railroad signals will be furnished with electrical energy where required.

Balboa Sand Service.

A report of sand shipped from Balboa during the month of June, follows:

DESTINATION.	Number cars.	Cubic yards.
Fifth Division.....	923	17,245
Sixth Division.....	4	84
First Division.....	19	309
Atlantic Division.....	60	1,428
Fortifications.....	483	9,712
Central Division.....	59	901
Panama railroad.....	23	575
Quartermaster's Department.....	1	15
Lighthouse subdivision.....	4	60
Panama Government.....	2	50
R. W. Hebard and Company.....	1	25
W. E. Weigle.....	1	25
Colon Electric and Ice Company.....	1	25
Central American Construction Co.....	4	100
Panama Brewing & Refriger'g Co.....	1	25
F. C. Stanton.....	1	25
Total.....	1,292	30,604

Sale of Public Buildings at Gorgona and Matichin.

OFFICE OF THE CHIEF QUARTERMASTER.

CULEBRA, C. Z., July 1, 1913.

Sealed proposals will be received at this office until 3 p. m., Saturday, July 19, 1913, and then opened, for the purchase of any or all of a miscellaneous lot of buildings located at Gorgona and Matichin, C. Z. List of the buildings offered for sale and full information relative thereto, can be secured upon application to any district quartermaster, or to this office. Proposals must be accompanied by certified check, post-office money order, or cash, for five per cent of amount bid. Envelopes containing proposals should be marked "Proposal for purchase of buildings" and addressed to the undersigned.

R. E. Wood,
Chief Quartermaster.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The moving picture schedule for the week, July 14 to 19 is, as follows: Monday, Corozal; Tuesday, Empire; Wednesday, Gorgona; Thursday, Culebra; Friday, Porto Bello and Gatun; Saturday, Cristobal.

COROZAL.

High scores in tenpins for the week ending July 5 were, as follows: Callahan, 222; Copeland, 210; Whiston, 200, 209.

Mr. D. E. Conner gave an exhibition of the game of chess at the clubhouse on Saturday night, July 5, playing seven Corozal players at once, winning five, and losing two games. Of his opponents, Mills and Sherrard won their games, while Morehead, Fields, Lindsay, Kingsbury, and Bartman lost one each.

Mr. F. A. Gause, superintendent of the Canal Zone schools, entertained about 225 people with an interesting and instructive illustrated lecture on Panama and the Canal, on Sunday evening, July 6.

CULEBRA.

Mr. H. G. Cornthwaite won first place in the local handicap tenpin tournament for the month of June, and Mr. Clarence Leonard finished second. The prizes are gold and silver medals.

High scores for the week in tenpins are, as follows: Leonard, 217; Fleischman, 210; Dougherty, 209, 202; Anderson, 202.

EMPIRE.

Gymnasium classes will be held twice weekly from now on. Mr. Russell, who has just returned from the United States, will have charge.

The Y. M. C. A. has secured the Tenth Infantry band to give an open air concert to the people of Empire, on Sunday evening, July 13, at the bandstand, beginning at 6 o'clock.

GATUN.

Two sets of indoor quilts have been ordered from the United States; also, a "Chess players' manual."

Mr. Louis DePorter, who has had charge of all pool and billiard activities since the opening of the clubhouse in March, 1910, was given a farewell reception by the members of the Gatun Y. M. C. A., on Wednesday evening, July 2. He was presented with a gift, and a set of resolutions was read in his honor. Following the presentation, the second half of a 300-ball match pool game for the championship of the Isthmus was played between Mr. DePorter and Mr. Theodore Wehmeier, the leading player of Cristobal. The first half of the match had been played at Cristobal on Tuesday evening, July 1, when the score resulted: DePorter, 160, Wehmeier, 140. The second half, played at Gatun resulted: DePorter, 140, Wehmeier, 81. Totals: DePorter, 300, Wehmeier, 221. During the evening, a progressive pool tournament was also played, with the following results:

DeMoll.....	23..32..28..28—111
Pettit.....	26..32..20..24—102
Baxter.....	22..25..27..20—94
Swallow.....	16..28..9..17—70
Garrison.....	22..13..20..13—68
Mitchell.....	17..5..22..15—59
Campbell.....	16..10..10..13—49
Reisner.....	12..10..12..10—44

Mr. De Moll received a cue as first prize, and Mr. Reisner, having won the booby prize, was presented with a ladies' white parasol.

Mr. D. C. Galloway has been appointed supervisor of pool and billiards, with Mr. F. H. Wang, first office assistant, and E. M. Foster, second assistant.

"Natural law in the world of labor" was the subject of an address given by Mr. W. Benton Childers at the meeting of the "Forum" on Tuesday evening, July 1. The tropical male quartet sang two songs, Mr. Ross sang a tenor solo, and Mr. Pearsall played several piano solos.

"Open house" was observed on July 4. The building was appropriately decorated, and free pool and billiards were enjoyed all day.

CRISTOBAL.

The results of the ragtime bowling tournament held on July 4 were, as follows:

Duckpins.

Weston, Cristobal, 101; Wurster, Gatun, 115; total, 216.

Davis, Empire, 110; Claherty, Gatun, 106; total, 216.

Pinney, Empire, 110; Giavelli, Empire, 101; total, 211.

High score, Claherty, Gatun, 120.

Tenpins.

Wolf, Empire, 156; Swallow, Gatun, 267; total, 423.

Barte, Gatun, 207; Wolf, Empire, 147; total, 354.

Swallow, Gatun, 174; Collins, Cristobal, 176; total, 350.

High score, Swallow, Gatun, 267.

Mr. E. J. Schulte, the assistant secretary during the past year, has resigned, and will sail for the States on July 14.

It is estimated that 3,000 people visited the Cristobal clubhouse on July 4. Three hundred and thirty games of tenpins and duckpins were rolled, and 600 games were played on the pool and billiard tables. Suitable accommodations were provided for those who wished rest and refreshment.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission and Panama Railroad Company, arrived at the ports of Cristobal and Colon, during the week ending July 5:

Tivies, June 29, from New York with 12 bales rubber hose, 12 cases rubber packing, 10 crates valves, 30 cases putty, 100 cases paint, 250 drums calcium carbide, for stock; 14 barrels floor tile, 9 reels cable, First Division; 20 pieces structural steel, 26 cases sheet copper, Panama Railroad Company.

Colonial, June 29, from Liverpool, with 6 pieces dredge buckets, 30 pieces bucket links, Sixth Division.

Talisman, June 30, from New York, with 4,080 bags cement, 8,700 cases dynamite, for stock.

Prins August Wilhelm, June 30, from New York with 1,756 pieces wrought pipe, 41 kegs rivets, 214 kegs bolts and nuts, for stock.

Carlota, July 1, from New Orleans, with 14,043 pieces lumber, Mechanical Division; 1,262 barrels paving brick, Panama Railroad Company; 300 pieces cross ties, 231 crates handles, 159 bales timothy hay, 50 cases wash bowls, 1,053 pieces lumber, 270 cases kerosene, 270 drums kerosene, 159 pieces piling, for stock.

Zacapa, July 2, from New York, with 12 cases valve machinery, 11 reels cable, First Division; 923 packages structural steel, Second Division; 425 pieces structural steel, Panama Railroad Company; 7 cases expansion bolts, fortifications; 600 rolls roofing paper, 544 sacks oats, 26 coils rope, for stock.

Colon, July 2, from New York with 29 cases files, 20 cases paint, 20 cases steel, 20 kegs chalk, 68 cases caustic soda, 25 barrels pipe-fittings, 53 rolls cotton duck, 60 cases lard oil, 120 cases varnish, 600 cases linseed oil, 668 bundles roofing iron, 250 bundles garbage cans, 50 crates buckets, 73 bales cotton waste, 153 cases common soap, 570 pieces steel bars, for stock; 38 reels copper wire, 233 rolls mesh reinforcement, 1,200 pieces structural steel, First Division; 9,500 pieces hollow tile, 203 pieces steel bars, Second Division; and a miscellaneous cargo, the whole consisting of 15,870 packages, weighing 860 tons.

Abangares, July 3, from New Orleans, with 356 packages castings, Mechanical Division; 116 barrels paving brick, Panama Railroad Company; 200 packages switch stands, 420 sacks dairy feed, 114 pieces piling, 434 bales timothy hay, 3,328 pieces yellow pine lumber, for stock.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, July 5, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia	Ahajuela	Camboa.	Gatun Lake.*
Sun., June 29.....	126.0	92.6	48.6	48.6
Mon., June 30.....	128.1	94.1	49.1	48.8
Tues., July 1.....	129.9	95.3	49.6	49.2
Wed., July 2.....	128.6	95.0	49.8	49.5
Thurs., July 3.....	126.4	92.9	49.6	49.6
Fri., July 4.....	127.6	93.7	50.1	49.9
Sat., July 5.....	129.0	94.8	50.7	50.2
Height of low water to nearest foot.....	125.0	91.0	44.0	

*Sluice gates in spillway closed on June 27, 1913, with water at elevation 84.25.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending July 19, 1913, (75th meridian time):

DATE.	High		Low		High.
	A.M.	P.M.	A.M.	P.M.	
July 13.....	5.00	11.12	5.41	11.59	
July 14.....	6.07	12.18	6.46		
July 15.....	7.12	1.23	7.47		
July 16.....	8.13	2.22	8.41		
July 17.....	9.07	3.14	9.31		
July 18.....	9.55	4.00	10.16		
July 19.....	10.38	4.43	10.58		

OFFICIAL CIRCULARS.

Transfer of Timekeeping Work.

CULEBRA, C. Z., July 2, 1913.

CIRCULAR No. 183-V:

Effective July 1, 1913, the timekeeping work and personnel at present partially centralized in the Department of Examination of Accounts, including the preparation of rolls and issues of coupon books, will be transferred to the office of the Chairman and Chief Engineer, Fourth Division. The timekeeping of the Central Division and the Subsistence Department will be taken over at a date to be later determined by the Chairman.

GEO. W. GOETHALS, *Chairman.*

Approved: June 14, 1913.

LINDLEY M. GARRISON,
Secretary of War.

Removal of Gorgona Shops.

CULEBRA, C. Z., June 25, 1913.

CIRCULAR No. 349-E:

1. Preparatory to the abandoning of the Gorgona shops, the work heretofore performed therein will be transferred to the Empire and the Balboa shops on the approximate dates hereinafter given.

2. The instrument repair shop will be transferred from Gorgona to Empire on June 30; all instruments requiring repairs will hereafter be sent to Empire shops.

3. The planing mill and carpenter shop will be transferred from Gorgona to Balboa shops during the week beginning July 7.

4. The foundry will be transferred to the Balboa shops, as follows:

Brass foundry on or about July 21.

Iron foundry on or about July 24.

Steel foundry on or about August 1.

The pattern shop will be transferred to Balboa on or about July 24.

The exact dates on which the different departments of the foundry and the pattern shop will be transferred to Balboa will be fixed by the inspector of shops.

5. The air brake department and the car machine shop will be transferred from Gorgona to Empire on August 1.

6. The transfer of the erecting, machine, blacksmith, and boiler shops from Gorgona to Empire will be made, as follows:

(a.) *Repair work.*—All locomotives, steamshovels, locomotive cranes, track shifters, spreaders, piledrivers, plows, and other classes of equipment, except cars (see Circular No. 349-B) and hand push cars, baggage trucks, and rock drills (see Circular No. 349-C), requiring repairs on or after August 1, will be sent to the Empire shops.

(b.) *Manufacturing work.*—All shop orders issued after August 1 covering manufacturing work that is not required to be completed prior to August 23 will be executed at the Empire shops. Shop orders covering manufacturing work issued prior to August 1 that are not required to be completed before August 31 will be transferred to the Empire shops at such time during the month of August as will least interfere with the prosecution of the work.

7. The office of the superintendent of the Mechanical Division, the drafting room, employees, and necessary machines, tools, and so forth, will be transferred from Gorgona to Empire at such times as may be directed by the inspector of shops. All correspondence with the Mechanical Division will be sent to Gorgona until the removal of the office of the superintendent, and of the drafting room, is announced.

8. Circulars Nos. 343 and 349-A are hereby modified to direct the work indicated above to be performed at the Empire and Balboa shops instead of at the Gorgona shops after the dates of transfer of work indicated above.

9. The heads of departments and divisions will anticipate, so far as practicable, their requirements for repair and manufacturing work, particularly for brass, iron, and steel castings, as during the transfer of each department there will be a period of about one week during which the output will be partly or entirely stopped.

H. F. HODGES,

Acting Chairman, Isthmian Canal Commission,
Second Vice-President, Panama Railroad Company.

Doors of Box Cars to be Kept Closed.

CULEBRA, C. Z., June 27, 1913

HEADS OF DEPARTMENTS AND DIVISIONS:

The deterioration of floor and sills in box cars is accelerated by the entrance of water through the doors when the latter are left open. Hereafter, the doors of all box cars will be kept closed, except when the operations of loading or unloading are actually being carried on.

The heads of departments and divisions will take

such action as is necessary to insure compliance with these instructions.

H. F. HODGES,

Acting Chairman and Chief Engineer.

Transfer of Major Ashburn to the Isthmian Service.

WAR DEPARTMENT,

WASHINGTON, D. C., JUNE 14, 1913.

Special Order

No. 138

[Extract.]

8. Maj. Percy M. Ashburn, Medical Corps, is relieved from duty as a member of the board of medical officers appointed for the purpose of studying tropical diseases as they exist in the Philippine Islands, and from further duty in the Philippine Department, and will proceed on the first available transport to San Francisco, Cal., thence to Ancon, C. Z., for the purpose of establishing a board of medical officers for the purpose of studying diseases as they exist in Panama. The travel directed is necessary for the military service.

[2047984, A. G. O.]

By order of the Secretary of War:

LEONARD WOOD,

Major General, Chief of Staff.

Official:

H. O. S. Heistand,

Adjutant General.

Gold Hill Hydraulic Operations.

COROZAL, C. Z., July 2, 1913.

ORDER:

Effective at 5 p. m., July 2, 1913, Mr. Wilber D. Stanton, assistant engineer, will assume charge of hydraulic operations at Gold Hill, vice Mr. W. L. Thompson, resigned.

H. O. COLE,

Resident Engineer, Fifth Division.

New Manager, Hotel Washington.

PANAMA RAILROAD COMPANY,

OFFICE OF GENERAL SUPERINTENDENT,

COLON, R. P., July 3, 1913.

CIRCULAR No. 123:

TO ALL CONCERNED:

Effective Wednesday, July 2, 1913, Capt. O. F. Wood is appointed manager of the Hotel Washington, vice Mr. J. D. Bennett, assigned to other duties.

J. D. PATTERSON,

General Superintendent.

Guarding Against Train Accidents.

PANAMA RAILROAD COMPANY,

TRANSPORTATION DEPARTMENT,

COLON, R. P., July 3, 1913.

TRANSPORTATION BULLETIN No. 87.

TO ALL CONCERNED:

An unknown man was recently killed on our line on account of being struck by a train. There have been a number of fatal accidents of this kind in the past, and while in each and every case, it has been shown that those who were struck by trains were trespassers, the matter is brought to your attention, in order that a more careful lookout may be kept by train and engine crews in the future to avoid accidents of this kind.

Employees and others have been much accustomed to use our tracks, although they trespass in doing so

and we may be able to avoid some fatal accidents by train and engine crews being on the alert.

J. D. PATTERSON,

General Superintendent.

Notice to Mariners.

BALBOA, C. Z., July 3, 1913.

Effective July 3, 1913, the buoys on the starboard side of the channel, coming in to Balboa, will flash "RED" until further notice. No change in other characteristics.

C. H. MANN, *Port Captain.*

June Rainfall for Three Years.

STATIONS.	1911	1912	1913	Station Av.	Years of record	Rainy days 1913
<i>Pacific Section—</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>		
Ancon.....	3.40	5.80	8.15	8.15	16	19
Balboa.....	4.23	5.88	7.15	7.90	17	19
Miraflores.....	3.71	7.51	9.49	10.56	5	18
Pedro Miguel.....	5.52	9.69	9.00	10.09	6	20
Rio Grande.....	4.03	6.63	8.05	9.20	9	23
<i>Central Section—</i>						
Culebra.....	4.25	7.57	9.10	8.87	22	19
Camacho.....	4.62	7.77	9.65	10.05	7	21
Empire.....	5.92	8.50	11.48	8.59	10	22
Gamboa.....	6.98	11.64	8.02	9.64	32	25
Juan Mina.....	9.12	12.65	9.67	10.48	3	19
Alhajuela.....	10.53	12.17	11.51	12.76	14	22
El Vigia.....	12.11	14.51	10.80	13.27	5	22
Gorgona.....	7.21	14.82	9.48	9.51	9	26
Frijoles.....	13.25	8.72	10.98	11.26	2	26
Trinidad.....	8.79	11.80	11.20	11.10	6	21
Monte Lirio.....	11.43	13.51	10.71	13.13	6	12
<i>Atlantic Section—</i>						
Gatun.....	14.72	14.80	10.70	13.39	8	20
Brazos Brook.....	16.10	19.12	12.17	15.36	7	24
Colon.....	15.58	15.90	11.81	13.32	43	22
Porto Bello.....	18.04	19.77	9.00	16.12	6	25

Rainfall from June 1 to June 30, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Pacific Section—</i>	<i>Ins.</i>		<i>Ins.</i>
Ancon.....	2.20	20	8.15
Balboa.....	2.70	20	7.15
*Miraflores.....	2.72	15	9.49
Pedro Miguel.....	1.42	14	9.00
Rio Grande.....	1.52	11	8.05
<i>Central Section—</i>			
Culebra.....	2.57	11	9.10
*Camacho.....	1.85	11	9.65
Empire.....	3.36	7	11.48
Gamboa.....	1.47	19	8.02
*Juan Mina.....	3.19	5	9.67
Alhajuela.....	2.71	11	11.51
*El Vigia.....	1.96	3	10.80
*Gorgona.....	2.10	20	9.48
*Frijoles.....	2.70	11	8.72
*Trinidad.....	2.44	13	11.20
*Monte Lirio.....	2.38	11	10.71
<i>Atlantic Section—</i>			
Gatun.....	1.70	1	10.70
*Brazos Brook.....	2.03	11	12.17
Colon.....	2.05	11	11.81
Porto Bello.....	1.56	3-15	9.00

*Standard rain gage—readings at 5 p. m., daily—automatic rain gage at unstarred stations—values midnight to midnight

WEATHER CONDITIONS, CANAL ZONE, JUNE, 1913.

Rainfall during June was more evenly distributed over the Isthmus than usual, but the total monthly precipitation was below normal at all stations, except Ancon, Culebra, Empire, and Trinidad. Practically all of the deficiency occurred after June 20. The monthly totals ranged from 7.15 inches at Balboa, to 12.17 inches at Brazos Brook. The maximum rainfall recorded in one day was 3.36 inches at Empire on the 7th.

The air temperature was slightly above normal for the month of June, and there was a moderate excess in wind movement at all stations except Ancon.

The cloudiness, relative humidity, and atmospheric pressure were below normal.

Forty-six per cent of the fog observed during the month were dissipated by 6.30 a. m., 92 per cent by 7.30 a. m., and 100 per cent by 8.30 a. m.

The following table summarizes the weather conditions for the month:

STATIONS.	Pressure (reduced to mean of 24 hours.)	Temperature.				Mean relative humidity.	Precipitation.			Wind.		
		Mean.	Maximum.	Date.	Minimum.	Date.	Total inches.	Station average.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Date.
Colon.....	29.854	80.2	91	J'ne 22	73	J'ne 11	11.81	13.32	22	5,420	S. E.	June 11
Culebra.....	29.837	80.1	92	J'ne 5	69	J'ne 24	9.10	8.87	19	3,695	N. W.	June 11
Ancon.....	29.828	80.2	93	J'ne 9	70	J'ne 12	8.15	8.15	19	3,978	N. W.	June 11

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.
Retail prices of cold storage provisions for the week beginning July 9, 1913:

FRESH MEATS.	Price
Mutton—Stewing, per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire forequarter (not trimmed, 10 pounds and over), per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short out chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Legs (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	17
Chops, per pound.....	26
Loin for roasting, per pound.....	26
Cutlets, per pound.....	30
Backbone, per pound.....	15
Suet, per pound.....	2
Soup, per pound.....	5
Stew, per pound.....	8
Plate, per pound.....	9
Corned, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Chuck, roast, 3 lbs. and over, per pound.....	12
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds), per pound.....	18
Pot roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, Chuck, per pound.....	12½
Round, per pound.....	13
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds) per pound.....	20
Tenderloin (Western), per pound.....	30
Pork—Loin chops or roast, per pound.....	17
Hams, fresh, per pound.....	\$20
Shoulders, fresh, per pound.....	\$17
Spare ribs, per pound.....	15
Backbones, per pound.....	15
Pigs' feet, each.....	7
Pigs' heads, each.....	60
Sausage meat, fresh, per pound.....	20
MISCELLANEOUS	
Livers—Beef, per pound.....	11
Calf, each.....	60
Half, each.....	30
Steak, Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	13
Frankfurter, per pound.....	13
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	20
Pork sausage meat, per pound.....	20
Sweetbread, beef, per pound.....	40
Eggs, fresh, dozen.....	27
one-half dozen only.....	14
Bluefish, per pound.....	15
Halibut, fresh, per pound.....	15
Roe shad, each.....	75
Shad roes, pair.....	40
POULTRY AND GAME.	
Chicken—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds, each.....	1.25
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00
Fowls, each.....	1.00
Ducks, (Western, about 4½ pounds), each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	50
Rabbits, skinned, each.....	30
Ducks, blackhead, pair.....	60
Partridges, pair.....	30
Grouse, per pair.....	30
Pheasants, per pair.....	30
CURED AND PICKLED MEATS.	
Ham—Sugar cured, per pound.....	20
Sliced, per pound.....	22
Half, for boiling, per pound.....	21
Boiled, per pound.....	28
Hocks, per pound.....	18
Beef, salt family, per pound.....	12
Bacon—Breakfast, whole piece, per pound.....	25
Sliced, per pound.....	26
Ham, lunch, per pound.....	32
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00
Pigs' feet, per pound.....	9
Tongues, per pound.....	18
DAIRY PRODUCTS.	
Butter—Creamery, special, per pound.....	34
Sheffield Farms, extra fancy, per lb.....	46

	Price.
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28
Cheese—Edam, each.....	1.00
Edam, tin.....	25
Parmesan, per pound.....	35
Gouda, per pound.....	30
Snappy, per cake.....	10
Milk (Certified), per bottle.....	**20
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	125
1-gallon.....	150
VEGETABLES AND FRUITS.	
Beets, per pound.....	3
Celery, per head.....	*10
Cabbage, per pound.....	3
Cucumbers, per pound.....	7
Carrots, per pound.....	3
Cauliflower, per pound.....	12
Egg Plant, per pound.....	*6
Lettuce.....	12
Onions, per pound.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	2
Parsnips, per pound.....	3½
Parsley, bunch.....	5
Peppers, green, per pound.....	*5
Rhubarb, per pound.....	4
Squash, per pound.....	5
Turnips, per pound.....	14
Tomatoes.....	18
Apples, per pound.....	17
Cantaloupes, each.....	8
Grape fruit, tropical, each.....	4
American, each.....	10
Lemons, dozen.....	24
Limes, per hundred.....	80
Oranges, Jamaican, per dozen.....	18
Watermelons, each.....	40

*Indicates reduction from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advance on last list.
††Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock, next lightest weight is supplied and refund note sent for difference.
‡Sold only from commissaries; no orders taken for delivery.
§Not less than half of a fresh ham or shoulder will be sold.

Misdirected Letters.

ANCON, C. Z., July 9, 1913.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Allen, Edgar	Knapp, James Z.
Anderson, Francis G.	Lajonie, L. A.
Artist, W. P.	Lora, Miss Virginia Gonzales
Barrat, J.	McNaught, Roy
Brady, George S.	Menninger, Kathryn
Davis, James	Mitchell, Frank
Doying, W. A. E.	Pearce, H. A.
Dugun, W. C.	Phillips, J.
Edwards, M. L.	Quick, Paul F.
Eggleston, Mrs. William	Shackleton, Jr., Mr.
Friedman, George	Simons, Clifford
Gearman, Chas.	Simpson, S. S.
Gheen, Luther	Stoddard, Mrs. Capt. C. B.
Gittens, Thorington	Sutherland, Mrs. Josephine
Goughan, John	A.
Hanna, John	Warner, J. G.
Hewett, Dr. Edgar L.	Williams, Mrs.
Hines, Mrs. Clement	
Hipp, J. C.	

Sale of Towboat "Exotic."

OFFICE OF DEPOT QUARTERMASTER.

MOUNT HOPE, C. Z., June 21, 1913.

Sealed bids will be received at this office until 2 p. m., Tuesday, September 2, 1913, for the steel-hull, stern-wheel towboat *Exotic*, built for the Commission in 1908 by Pusey and Jones, Wilmington, Del., at an approximate cost of \$40,000.

Gross tonnage, 150; two tandem compound engines, 7-inch by 14-inch, 48-inch stroke; two horizontal tubular boilers, Mississippi River type, 44-inches by 190-inches; indicated horsepower, 70; equipped with boiler feed pumps; boat equipped with capstan, steam steering gear, etc.; retired from service in 1911.

This boat can be inspected and further particulars obtained on any working day between 7 and 11 a. m., and 1 and 5 p. m., upon application at this office; any further information desired by intending bidders at a distance will be furnished by letter on request. Right is reserved to reject any or all bids.

Bids should be addressed to the Depot Quartermaster Mount Hope, Canal Zone, plainly marked, "Proposal to purchase towboat *Exotic*, to be opened September 2, 1913."

C. NIXON,
Depot Quartermaster.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Advance.....	P. R. R. Wednesday.....	July 2
Panama.....	P. R. R. Tuesday.....	July 8
Allianca.....	P. R. R. Monday.....	July 14
Colon.....	P. R. R. Saturday.....	July 19
Advance.....	P. R. R. Saturday.....	July 26
Panama.....	P. R. R. Friday.....	Aug. 1
Allianca.....	P. R. R. Thursday.....	Aug. 7
Colon.....	P. R. R. Tuesday.....	Aug. 12
Advance.....	P. R. R. Tuesday.....	Aug. 19
Panama.....	P. R. R. Monday.....	Aug. 25
Allianca.....	P. R. R. Saturday.....	Aug. 30

CRISTOBAL TO NEW YORK.

Advance.....	P. R. R. Monday.....	July 14
Panama.....	P. R. R. Sunday.....	July 20
Allianca.....	P. R. R. Saturday.....	July 26
Colon.....	P. R. R. Thursday.....	July 31
Advance.....	P. R. R. Thursday.....	Aug. 7
Panama.....	P. R. R. Wednesday.....	Aug. 15
Allianca.....	P. R. R. Tuesday.....	Aug. 19
Colon.....	P. R. R. Sunday.....	Aug. 24
Advance.....	P. R. R. Sunday.....	Aug. 31

NEW YORK TO COLON.

Almirante.....	U. F. C. Wednesday.....	July 2
Prinz Joachim.....	H. A. Saturday.....	July 5
Carrillo.....	U. F. C. Saturday.....	July 5
Trent.....	R. M. Saturday.....	July 5
Santa Marta.....	U. F. C. Wednesday.....	July 9
Carl Schurz.....	H. A. Saturday.....	July 12
Pastores.....	U. F. C. Saturday.....	July 12
Metapan.....	U. F. C. Wednesday.....	July 16
Magdalena.....	R. M. Saturday.....	July 19
Tivies.....	U. F. C. Saturday.....	July 19
Prinz August Wilhelm.....	H. A. Saturday.....	July 19
Zacapa.....	U. F. C. Wednesday.....	July 23

COLON TO NEW YORK.

Zacapa.....	U. F. C. Thursday.....	July 10
Emil L. Boas.....	H. A. Tuesday.....	July 15
Sixola.....	U. F. C. Tuesday.....	July 15
Almirante.....	U. F. C. Thursday.....	July 17
Prinz Joachim.....	H. A. Tuesday.....	July 22
Carrillo.....	U. F. C. Tuesday.....	July 22
Danube.....	R. M. Tuesday.....	July 22
Santa Marta.....	U. F. C. Thursday.....	July 24
Carl Schurz.....	H. A. Tuesday.....	July 29
Pastores.....	U. F. C. Tuesday.....	July 29
Metapan.....	U. F. C. Thursday.....	July 31
Prinz August Wilhelm.....	H. A. Tuesday.....	Aug. 5

NEW ORLEANS TO COLON.

Atenas.....	U. F. C. Saturday.....	July 5
Parismina.....	U. F. C. Wednesday.....	July 9
Turrialba.....	U. F. C. Saturday.....	July 12
Cartago.....	U. F. C. Wednesday.....	July 16
Abangarez.....	U. F. C. Saturday.....	July 19
Heredia.....	U. F. C. Wednesday.....	July 23
Atenas.....	U. F. C. Saturday.....	July 26

COLON TO NEW ORLEANS.

Abangarez.....	U. F. C. Thursday.....	July 10
Heredia.....	U. F. C. Saturday.....	July 12
Atenas.....	U. F. C. Thursday.....	July 17
Parismina.....	U. F. C. Saturday.....	July 19
Turrialba.....	U. F. C. Thursday.....	July 24
Cartago.....	U. F. C. Saturday.....	July 26

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays at 3 p. m.; ships for New York via Kingston on Tuesdays at 1.30 p. m. and Thursdays at 1.30 p. m.; for Bocas del Toro on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct, Tuesdays at 3 p. m.

Hamburg-American steamers sail for New York, via Kingston and Santiago de Cuba, on Tuesdays; the *Prinz Joachim* and *Prinz August Wilhelm* at 10 a. m., and the *Emil L. Boas* and *Carl Schurz* at 2 p. m.

The Panamanian Steamship Company's steamer *Panama* will sail from Panama, for Aguadulce and Pedregal, on Sunday, July 20.

The following ships arrived at, or departed from, the port of Balboa during the week ending July 7:

Arrivals—July 2, *Limari*, from south ports; July 2, *Huallaga*, from south ports; July 3, *Acapulco*, from San Francisco via Central America; July 4, *Ecuador*, from Guayaquil; July 7, *Ucayali*, from south ports; July 6, *Santa Rita*, Port San Luis, California;

Departures—June 30, *Guatemala*, to south ports; July 4, *Chile*, to intermediate ports; July 7, *Limari*, to south ports.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, JULY 16, 1913.

No. 47.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is published free of charge, one copy each to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Consolidation of Quarters in Colon and Cristobal.

Effective August 1, all Canal Commission and Panama railroad quarters at Colon and Cristobal, with the exception of the new Hotel Washington, will be consolidated and placed under the jurisdiction of the Quartermaster's Department, and all repairs to houses and furniture, will, thereafter, be handled by its forces. The consolidation is in the interest of economy, for, under the existing arrangement, the district quartermaster at Cristobal delivers coal and wood to the houses on Colon Beach, furnishes team service, when required, and collects the garbage, while the repairs to quarters and furniture of the Panama railroad are made by its men. In this way, it has been necessary for the railroad company to send its force to repair quarters in Cristobal, and for the district quartermaster to perform similar work at the hospital quarters on Colon Beach.

Canal Excavation in June.

The grand total of Canal excavation to July 1 was 203,383,539 cubic yards, leaving to be excavated 14,812,034 cubic yards.

The total excavation for the month of June was 2,659,424 cubic yards, as compared with 2,339,770 cubic yards for the corresponding month last year, and 2,646,442 cubic yards in June, 1911.

The dry excavation for the month amounted to 1,152,299 cubic yards, entirely by steamshovels. The dredges removed 1,507,125 cubic yards, nearly attaining the total of the previous month, 1,525,493 cubic yards, which was the highest of record on the Canal.

In the Atlantic Division, the total excavation was 814,980 cubic yards. Of this amount, all but 388 cubic yards consisted of material dredged from the Atlantic entrance and approach to Gatun Locks.

The total excavation in Central Division territory was 878,300 cubic yards, 57,274 cubic yards of which consisted of hydraulic excavation, back of Gold Hill, performed by the

forces of the Fifth Division. Central Division shovels removed 821,026 cubic yards, as follows: Eight hundred and five thousand one hundred and nine cubic yards, classified as primary excavation from Culebra Cut; 13,017 cubic yards charged to "Plant" excavation, and 2,900 cubic yards from the drainage ditch between Empire and Culebra, on the west bank. The total excavation from the Culebra Cut section in June, 1912, was 1,348,780 cubic yards.

In the Pacific Section, the total excavation was 966,144 cubic yards, 330,885 cubic yards by steamshovels, and 635,259 cubic yards by dredges. The dry excavation consisted of 229,894 cubic yards from the Canal prism, south of Miraflores Locks, and 100,991 cubic yards from the terminal site. The wet excavation consisted of 604,080 cubic yards from the Pacific entrance, between the dike and the sea, and 31,179 cubic yards from the terminal basin.

A detailed statement of excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total Excavation.
	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>
Dry excavation—			
Locks, dam and spillway.....	388		388
Mindí.....			
Terminal.....			
Total.....	388		388
Wet excavation—			
Atlantic entrance.....	814,592		814,592
Locks, dam and spillway.....			
Terminal.....			
Total.....	814,592		814,592
Total wet and dry excavation.....	814,980		814,980

CENTRAL DIVISION.

Dry excavation—			
Culebra Cut.....	805,109	13,017	818,126
Diversions.....	2,900		2,900
Hyd. exc. (By 5th Div.).....	57,274		57,274
Total.....	865,283	13,017	878,300

PACIFIC DIVISION.

Dry excavation—			
Locks, dam and spillway.....			
Terminals.....	100,991		100,991
Prism.....	229,894		229,894
Total.....	330,885		330,885
Wet excavation—			
Pacific entrance.....	604,080		604,080
Miraflores Locks.....			
Diversions.....			
Terminals.....	31,179		31,179
Total.....	635,259		635,259
Total wet and dry excavation.....	966,144		966,144

TOTAL CANAL EXCAVATION.

Dry excavation.....	1,139,282	13,017	1,152,299
Wet excavation.....	1,507,125		1,507,125
Total.....	2,646,407	13,017	2,659,424

LOCKS AND DAMS.

MATERIAL.	Atlantic.	Pacific.	Total.
	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>	<i>Cu. Yds.</i>
Concrete placed in locks.....	5,509	4,609	10,118
Concrete placed in dams and spillways.....	565	21,959	22,524
Fill placed in dams.....	99,457	11,800	111,257

Mean rainfall along Canal (ten stations), 9.35 inches.

By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as prism, diversions, or locks, etc.; that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

Paraiso Selected for Dredging Headquarters.

The Chairman and Chief Engineer has approved the recommendation of the resident engineer of the Sixth Division that the various dredging units in the Canal service be consolidated, with headquarters at Paraiso. In view of the projected dredging operations in the Culebra Cut section after the water is turned in, this arrangement will, it is believed, place the plant on a basis where it can be maintained more economically, for, under present conditions, in making extensive repairs to dredges engaged in Cut excavation, it would be necessary to send them either to Balboa or Cristobal, involving a loss in time and labor. Repairs to the dredging fleet are now made in the shops situated one at each end of the Canal. Under the new plan, these shops will be abandoned, and the repair work centralized in the shop at Paraiso. The two offices now maintained, one at Balboa, and the other on dock No. 14, Cristobal, will also be consolidated at Paraiso, and quarters will be provided there for the Sixth Division employees, including the resident engineer and the dredging superintendent, leaving but one clerk at each end to look after miscellaneous work.

In order to insure an adequate fuel supply for the dredges operating in the Culebra Cut section, coal will be brought through the Canal from the Atlantic side in rock and sand barges, and fuel oil will be piped into a tank to be erected at Paraiso. In providing suitable facilities for making repairs to the dredging fleet, a 5-pile bent wharf, 500 feet long, is to be constructed so that it will set in a recess in the bank of the Canal. The floor of this wharf will be at elevation 95 feet above sealevel and it will be of sufficient strength to permit of the handling of heavy repair parts with a 100-ton crane. In addition, another recess will be excavated nearby, with six 10-pile dolphins driven close to the shore line, for the purpose of mooring barges, tugs, and other floating equipment.

For the actual repair work, it has been decided to refit the old machine shop at Paraiso,

NOTES OF PROGRESS.

(Continued).

now occupied temporarily by the First Division, and by the American Cement Tile Manufacturing Company. A list of the machinery required has been prepared and includes the following:

Machine shop—Five lathes, one each 30-inch, 26-inch, 16-inch, 14-inch, and 12-inch, one 6-foot boring mill, one 18-inch slotter, one Universal grinder, one wet grinder, one dry grinder, one planer, one bolt cutter, one radial drill, four vertical drills, and one No. 3 milling machine.

Blacksmith shop—One steam hammer, four forges.

Boilermaker shop—One countersinking machine, one radial drill, one vertical drill, three punch and shears, one set plate rollers, one furnace, one forge, one grindstone.

Carpenter shop—One band saw, one circular saw, one wood planer.

All of the above machinery is available at one or the other of the present shops.

The requirements for the new plant are estimated to cost about \$81,000, as follows: Construction of repair wharf, using cypress piles, \$15,000; conversion of building No. 2 into an office for the resident engineer, \$1,000; erection of oil tank and laying pipeline, not including, however, cost of the tank, which can be procured from the Mechanical Division, \$1,000; driving of dolphins for moorings, \$1,000; excavation for recesses, approximately 100,000 cubic yards, at 60 cents a yard, \$60,000; installation of machinery, \$3,000. The recesses are designed to provide ample room for the pontoon bridge, in case that method of crossing the Canal, after the destruction of Gamboa dike, is adopted.

Native Residents Leaving Gorgona.

The personal effects and household goods of some of the native residents at Gorgona were loaded into two Panama railroad box cars, especially provided for the purpose, on Wednesday, July 9, for transportation to Panama. An additional coach was also attached to train No. 5, leaving Colon at 10.30 a. m., on Thursday, July 10, for the accommodation of about 60 men, women, and children, who are removing from the native town at Gorgona. Some of the people expect to go to the town of New Gorgona, which the Panama Government is laying out on the south coast, about 25 miles west of Panama City.

Agricultural Opportunities.

The Department of Commerce and Labor has issued a series of bulletins describing the agricultural opportunities throughout the United States and the territories of Alaska and Hawaii. A limited number of these bulletins are available for distribution on the Isthmus and will be furnished employees of the Isthmian Canal Commission and Panama Railroad Company upon application to the office of the Chairman.

Record Day's Output for the "Corozal."

The *Corozal* established a new record for one day for ladder dredges in the Canal service, on Friday, July 11, by excavating 13,700 cubic yards of material, 90 per cent of which was rock, in 19 hours and 50 minutes actual working time, an average of about 685 cubic yards an hour. The dredge has been working in the Canal prism, north of the old dam, ever since the latter was dynamited on May 18, and

during the nine days of the present month, up to July 12, in which it was operated, the daily average of material excavated has been approximately 12,000 cubic yards. The dredge was taken off the work on Saturday, July 12, in order to have its top tumbler replaced, and will be out of commission for about two weeks. The tumbler is made up of five separate pieces, and is hard to handle with the cranes available. When the new floating cranes are in service, it is estimated that the exchange of tumblers may be effected within 24 hours.

Uniform Rate for Water Supplied Shipping.

A uniform rate for water supplied shipping at Colon, Cristobal, and Balboa will be placed in effect on August 1. The rate per thousand gallons will be \$1, with a minimum charge of \$2. In delivery from dock for water delivered by lighter, there will be an additional charge of \$15 an hour to cover tug service in handling lighter, with a minimum charge for such service of \$15.

Concrete Work in Locks and Spillways.

Concrete work in the Canal locks is nearly completed, the aggregate amount in place at the close of work on July 12, being 4,468,112 cubic yards.

A statement of the concrete laid in the three sets of locks for the Canal, and in Gatun and Miraflores spillways, as of July 12, follows:

GATUN LOCKS.		Concrete laid.
July 7.....		52
July 8.....		98
July 9.....		72
July 10.....		104
July 11.....		174
July 12.....		122
Total.....		622
Previously reported.....		2,041,349
Grand total.....		2,041,971
PEDRO MIGUEL LOCK.		
July 7.....		32
July 8.....		78
July 9.....		7
July 10.....		9
July 11.....		8
July 12.....		21
Total.....		155
Previously reported.....		921,740
Grand total.....		921,895
MIRAFLORES LOCKS.		
July 7.....		27
July 8.....		44
July 9.....		65
July 10.....		53
July 11.....		49
Total.....		238
Previously reported.....		1,504,008
Grand total.....		1,504,246
GATUN SPILLWAY.*		
July 7.....		64
July 8.....		66
July 9.....		86
July 10.....		58
July 11.....		76
July 12.....		51
Total.....		401
Previously reported.....		229,142
Grand total.....		229,543
MIRAFLORES SPILLWAY.		
July 7.....		187
July 8.....		245
July 9.....		338
July 10.....		280
July 11.....		315
July 12.....		249
Total.....		1,614
Previously reported.....		67,088
Grand total.....		68,702
*Includes hydroelectric station.		

COLON ELECTRIC TRAMWAY.

Fifty Year Franchise Granted Dr. Antonio Papi Aizpuru by Municipality.

The contract for the construction of a street railway in Colon was executed between the municipal council of that city and Dr. Antonio Papi Aizpuru on November 21, 1910. This contract was approved by the president of the council on January 18, 1911, and by the alcalde on February 4, 1911. Work on the system has begun on May 23, 1913, and the track has been laid for practically its entire length on D street. A bond for \$7,500 for proper replacement of the paving was given by Dr. Aizpuru, with Messrs. Ruben S. Arcia and Pascal Canavaggio as sureties, and this instrument, which will be in force for eight years, has received the approval of the Chairman of the Canal Commission, and the General Counsel.

Dr. Aizpuru has turned over his interest in the franchise to a company, known as the Colon Electric Tramway Company, organized with a capital stock of \$50,000, of which Mr. Ruben S. Arcia is president; Mr. Elias Aizpuru, secretary, and Mr. H. Hellinger, manager. The track will be 42-inch gage, and will be constructed of 56-pound steel T-rail, laid on wooden cross-ties, six feet long and six inches square. Some of the principal items in the construction of the system will be: One hundred and seventy-one tons of steel rail; 4,000 cross-ties; four cars, equipped with storage batteries, estimated to cost \$12,400; car shed to cost \$2,500; electric plant to cost \$3,250, and the breaking up and replacing of 8,550 square feet of macadam, \$4,788. The erection of an electric plant to furnish power for operating the line has not yet been fully decided upon, and current for a time may be obtained from a local company.

The main line will begin at the intersection of D and Second streets, thence extend westward to Bottle alley, thence to Fifth street, thence to Bolivar street to the starting point, the line thus forming an irregular loop. The construction of a branch line from Bolivar and Eighth streets to the railroad station is contemplated, and, under the contract, other branch lines in the extension of the service may be built from time to time.

The contract under which the company will operate is in force for 50 years. The work of construction must be completed within one year after it is begun, and the company has been required to deposit \$2,000 in the municipal treasury as an act of good faith. The company is exempt from the payment of municipal taxes, but it is required to pay into the municipal treasury three per cent of its gross receipts for the first three years of operation, and four per cent of its gross receipts after the first five years. Cars will be required to operate from 6 a. m., to 11 p. m., and a penalty of \$12.50 is provided for each day's suspension of service. The fare is limited to five cents, United States currency, over the whole or any part of the system, and includes the carriage of parcels and baggage that do not exceed a measurement of more than 27 centimeters. Certain public officials, and members of the police and fire departments are to be carried free upon proper authorization. Freight cars may be operated at the option of the company. All differences are to be submitted to a tribunal for arbitration.

SOCIAL LIFE OF THE ZONE.

Camp Fire Girls.

The Camp Fire Girls of Gatun gave a subscription entertainment at the residence of the camp fire guardian, Mrs. William L. Sibert, on Tuesday, June 17. The object of the entertainment was to raise money for the purpose of joining the national organization of the "Burden Bearers."

The twelve members of the camp fire appeared in their ceremonial dress, wearing their honor beads. The following program was given:

Introductory address.....Aurelia Karkeet
Recitation—*Burn, fire, burn*.....Wilma Grant
Song—*Burn, fire, burn*.....The circle
Indian club swinging.....Mary Sibert and Joseph Reed
Recitation—*The wind*.....Sarah Widener
Dance—*Washing clothes*
Katherine Parmeter and Dorothy Childers.
Song—*Mammy moon*.....The circle
Dance—*Mountain dance*.....The circle
Recitation—*The travelers*.....Marion Ross
Piano duet.....Katherine Waid and Mary Sibert
Dance—*The butterfly*
Barbara Gayer, Katherine Parmeter, Lucile Childers, and Sarah Widener.
Song—*The bugle man*.....The circle
Florence Kenny, Katherine Parmeter, Josephine Reed and Mary Sibert.
Recitation—*The children's hour*.....Florence Kenny
Dance.....The circle
Song—*Goodnight*.....The circle

On July 3, the circle held an outing under the care of the guardian and assistants, going to Colon, where they spent a part of the afternoon at the Hotel Washington swimming pool.

Church Notes.

The Culebra Christian League held a farewell reception in honor of the retiring chaplain, the Rev. A. A. Nellis, and family, on Tuesday evening, July 15. At this time, it was decided to disband the league, as it was considered unwise to continue it without a chaplain. The Sunday evening services will be continued at the chapel under the auspices of the Young Men's Christian Association.

A reception was tendered the Rev. Mr. Nellis, and Mrs. Nellis, by the Thursday evening song and praise association of Pedro Miguel, on July 10, following the farewell preaching service. A musical program, in which Mrs. R. A. Morton, Mrs. J. C. Ewing, Miss E. Whiting, and Messrs. G. C. Hover and Ray Millet took part, was given, and an address was delivered by Mr. A. H. Shrimpton. The association presented Chaplain Nellis with a watch fob and charm as a token of appreciation of his past services. The arrangements were in charge of Mrs. W. H. Faulkner and

Mr. C. E. Pendry, and refreshments were served by the women of the organization. The Rev. Mr. Nellis has been the visiting chaplain at Pedro Miguel since his arrival on the Isthmus in 1910.

Fourth of July Tennis Tournament.

The following are the results of the tennis tournament played in connection with the Fourth of July celebration:

Preliminary singles played June 22, 1913.

Fechtig defeated Drennan, 6-0; 6-2.
Bartholomew defeated Kuhn, by default.
Earhart defeated Dryden, 6-3; 6-3.
Poole defeated Goethals, 6-3; 2-6; 6-2.
Herrick defeated Poole, 8-6; 6-3.
Edwards defeated Smith, 6-3; 7-5.
Neely defeated Ross, 10-8; 8-6.
Shropshire defeated Rowe, 7-5; 5-7; 6-2.
Ohlson defeated Wechlar, by default.
Nevius defeated Ohlson, 6-1; 6-2.

Second Round.

Fechtig defeated Bartholomew, 6-4; 6-4.
Herrick defeated Earhart, 8-5; 6-2.
Neely defeated Edwards, 6-4; 6-4.
Nevius defeated Shropshire, 6-4, 6-4.

Semifinals.

Fechtig defeated Herrick, 7-5; 6-4.
Nevius defeated Neely, 4-6; 6-4; 6-1.

Finals played at Cristobal, July 4.

Nevius defeated Fechtig, 6-0; 4-6; 6-3.
Preliminary doubles played June 22.
Herrick and Drennan defeated Gassman and Daschell, 6-3; 6-2.

Earhart and Neely defeated Snyder and Ross, 7-9; 6-3; 6-2.

Pearman and Russell defeated Reeder and Crabtree, 6-4; 6-2.

Edwards and Bartholomew defeated Goethals and Kuhn, 6-2; 6-0.

Shropshire and Sherrard defeated Wechlar and Burlingham, 6-2; 6-4.

Fechtig and Nevius defeated Rowe and Ohlson, 6-4; 12-10.

Second Round.

Earhart and Neely defeated Herrick and Drennan, 6-4; 6-4.

Earhart and Neely defeated Pearman and Russell, 9-7; 3-6; 6-4.

Fechtig and Nevius defeated Shropshire and Sherrard, 6-1; 6-1.

Edwards and Bartholomew defeated Fechtig and Nevius, 4-6; 6-3; 6-4.

Earhart and Neely defeated Edwards and Bartholomew, 4-6; 6-4; 10-8.

Semifinals, consolation, played July 13.

Ross defeated Ohlson, 6-4; 6-1.

Finals.

Ross defeated Drennan, 6-4; 6-4.

In the report of the results of the aquatic events at the Fourth of July celebration at Cristobal, event No. 17 should have been omitted, as it was not held. Event No. 18, aquatic jousting tournament, should have been included, with W. Fraser, first; J. Raymond, second.

EXECUTIVE ORDER.

Jury Trials in the Canal Zone.

Under authority vested in me by law, it is ordered:

That paragraph 1 of Executive Order No. 750, dated February 6, 1908, providing for jury trials in the Canal Zone, is hereby amended to read, as follows:

1. In all criminal prosecutions in the Canal Zone for felonies, the accused shall enjoy the right of trial by an impartial jury of the District in which the crime shall have been committed, to be chosen, as follows:

This Order shall take effect on and after July 4, 1913.

WOODROW WILSON.

THE WHITE HOUSE,

June 30, 1913.

[No. 1792.]

PERSONAL.

Col. John L. Chamberlain of the Inspector General's Office, United States Army, arrived on the Isthmus, on the *Cristobal*, which docked on Monday, July 14.

Congressmen George J. Kindel of Colorado, and S. Hubert Dent of Alabama, accompanied by Mrs. Dent and son, were passengers on the *Cristobal*, which arrived on Monday, July 14.

Justice Thomas E. Brown, Jr., returned from leave of absence, on the *Panama*, which docked at Cristobal on Monday, July 14.

Mr. A. K. Stone, formerly master of transportation of the Panama Railroad Company at Colon, sailed for the United States on the *Colon*, on Tuesday, July 8.

Rapid Handling of Powder.

The largest shipment of Trojan powder ever unloaded at Balboa was received on the steamer *Lyra* on July 9, from San Francisco. It consisted of 5,000 cases, which were carried out of the vessel in exactly three hours, constituting a record in the unloading of explosives at the Balboa wharf.

Hotel Washington Service.

The contemplated change in service at the Hotel Washington, advertised to take effect Tuesday, July 15, has been deferred until further notice.

O. F. WOOD, Manager.

COLON, R. P., July 12, 1913.

Cristobal Marine Association.

The Cristobal Marine Association meets every first and third Sunday in the month at Cristobal lodge hall, house No. 1, upstairs, at 8 p. m. The next meeting will be on July 20.

L. PETTOLETTI,

Recording Secretary.

CRISTOBAL, C. Z., July 9, 1913.

I. B. of S. S. and D. M.

Local No. 19, International Brotherhood of Steamshovel and Dredgemen, will hold its next meeting at Empire lodge hall on Sunday, July 20. All members are requested to attend.

J. I. MAJOR,

Secretary and Treasurer.

Empire, C. Z., July 13, 1913.

United Spanish War Veterans.

Chagres Camp will hold a meeting in the I. C. C. lodge hall at Bas Obispo, on Saturday, July 19, at 8 p. m.

STEPHEN BYRNE, Adjutant.

Gorgona, C. Z., July 14, 1913.

TEAM SCORES IN FOURTH OF JULY TRACK EVENTS.

The team scores in the track events at the Fourth of July celebration at Cristobal are shown in the following table:

EVENT.	Ancon	Corozal	Cristobal	Culebra	Camp Elliott	Empire	Gorgona	Toro Point
100-yd. hurdles.....		5	1	3				
Shot put.....					3	1	5	
880-yd. run.....	5-1		3					
100-yd. dash.....		5	1				3	
440-yd. run.....	5				3-1			
Running broad jump.....	1				5		3	
Pole vault.....				4				5
220-yd. dash.....		5					3-1	
One mile relay.....		3		1	5			
Marathon.....	5-3		1					
Running high jump.....				3	5		1	
Total.....	20	18	6	11	22	1	16	5

Five points were awarded team securing first place; three points for second place, and one point for third place. The team scoring the most points in the regular events was given a point trophy.

CHAPTER SECTION *4

THE UNIVERSITY OF CHICAGO

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*Total to July 1, 1913	94,811,800 cubic yards	Excavated 1904	243,472 cubic yards	1905	914,254 by sluicing	57,074 cu. yds.
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Excavated various points in prism to July 1. 1913. 4,513 cu. yds.; Balboa Locks and Dams, 1907, 78,233 cu. yds.; Outside

†Total to July 1, 1913, 6 652,364 cu. yds. in 1906; 1,340,179 cu. yds. in 1907; 2,114,361 cu. yds. in 1908.

‡Total to July 1 1913, 1,320,127 cubic yards; including 256,780 cu yds in 1908.

Total to July 1, 1913, 6/9 4/1 cubic yards; including 318,731 cu. yds in 1912.

THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO

4,839,407	5,528,661	5,785,226	5,267,209	3,128,890	2,056,025	8,499,498	5,538,745	5,472,308	4,891,741	2,164,627	264,556	546,814	966,379		
Total	156,745,906	4,839,407	5,528,661	5,785,226	5,267,209	3,128,890	2,056,025	8,499,498	5,538,745	5,472,308	4,891,741	2,164,627	264,556	546,814	966,379

††Miraflores Locks and Dam, 1909-12, 652,246 cu. yds.; total to June 1, 1913, 652,246 cu. yds.

Total to July 1, 1913, 38,343,119 cu. yds.; including 3,820,175 cu. yds. in 1905-07.

** Total to July 1, 1913, 1,777,749 cu. yds.

[illegible]

trial.....	18 x 21	147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959,
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1. The first part of the document is a title page. It contains the title "THE HISTORY OF THE UNITED STATES OF AMERICA" and the author "BY JAMES MADISON".

2. The second part of the document is a preface. It contains the text "I have the honor to acknowledge the receipt of your letter of the 10th inst. and in reply to inform you that the same has been forwarded to the proper authorities for their consideration."

3. The third part of the document is the main body of the text. It contains the text "The first part of the document is a title page. It contains the title 'THE HISTORY OF THE UNITED STATES OF AMERICA' and the author 'BY JAMES MADISON'."

4. The fourth part of the document is a conclusion. It contains the text "I have the honor to acknowledge the receipt of your letter of the 10th inst. and in reply to inform you that the same has been forwarded to the proper authorities for their consideration."

020 347 020

By Americans--
French excavation useful to present Canon.....

Dredges.....	18,173.011
Total.....	203,383 539

January 1 to December 31, 1905.....	1,799,221
January 1 to December 31, 1906.....	4,948,497

January 1 to December 31, 1908.....	37,116,735
January 1 to December 31, 1909.....	25,006,122

January 1 to December 31, 1910.....	31,603.899
January 1 to December 31, 1911.....	31,603.899

January 1 to July 1, 1919..... 10,100,441

A vertical ruler scale showing measurements from 0 to 6 inches. The markings are as follows:
- 0 inch at the bottom.
- 1 inch mark with "1" below it.
- 2 inch mark with "2" below it.
- 3 inch mark with "3" below it.
- 4 inch mark with "4" below it.
- 5 inch mark with "5" below it.
- 6 inch mark with "6" below it.
The ruler has horizontal tick marks every half-inch and vertical tick marks every quarter-inch. There are also small numbers between the main inch markings: "1/2" between 1 and 2, "3/4" between 2 and 3, "5/8" between 3 and 4, and "7/8" between 4 and 5.[illegible]

Dredges.....	37,156,984	1,850,676
	43,983,500	1,850,676

.....	12,384,655	107,196,433	300,000
All other points.....	.....	.....	.....

Dredges.....	40,773,114	50,201,518	7,081,197	7,863,532
Dry elevator.....	9,428,404	10,000,000	10,000,000	10,000,000

1891

CHAGRES RIVER GRAVEL.

Committee Reports on Method of Handling for Future Use.

The Chairman has approved the following report of a committee, consisting of Mr. W. G. Comber and Lieutenant Frederick Mears, appointed to investigate the procuring of Chagres gravel for various construction purposes:

"The committee visited the Chagres gravel beds to one-half mile above the village of Cruces, and found sufficient quantities to fulfill all requirements; the survey forces of the Second Division are now making necessary surveys and so marking the beds that they may be readily located when the lake level is raised.

"The responses to your letter of May 12, asking for information as to the gravel requirements of various divisions and departments, show that there will be a good demand for this class of material, and that it will be justifiable to put in a good plant for the handling of same and maintenance of a steady output for some years, experience having shown that the demands for material increase rather than diminish.

"One source of profitable use for this gravel has not been touched on by any of the replies to your letter of May 12, i. e., that of highway use; if we can furnish this material at about the figure named, it is probably the cheapest and best highway material that is available.

"The requirements of the various departments, under the plan proposed by us, cannot be filled until we have sufficient water in the lake to take care of the dredging plant required, but it is thought that by August 1, material in the Canal, just below the Gamboa bridge, can be dredged with pipeline suction dredge sufficient for temporary requirements, and delivered on shore where it can be loaded by clamshell on cars for shipment. For permanent supply your committee would respectfully suggest the employment of an outfit substantially a duplicate of the Chamé sand-handling plant, i. e., a French ladder dredge with a sufficient number of sand barges to fill all wants, together with a small tug to move the barges to the wharf. The dredge *Gopher*, or *Mole*, is thought to be the most suitable for this work, and the *De Lesseps*, a suitable tug; barges are also available, or will be by the time needed. The committee recommends the construction of a small pile wharf at a suitable location east of the Gamboa bridge, about 200 feet long, together with an overhead bin with a capacity of about 500 cubic yards of gravel, so that cars may be loaded by gravity from it, and the further construction of suitable spur tracks to the wharf and under the bins. It is considered that by the time the lake level is sufficiently high for this work, Chamé operations can be stopped and the plant moved to the lake.

"In the matter of moving the gravel-dredging outfit from the Canal to above and east of the Gamboa bridge, it is thought that dredge and tug may be passed through by lifting a set of girders north of the center span on two barges and towing them away until the dredging outfit has passed through, when the girders can be replaced in the same way; it is considered perfectly feasible to do this on a Sunday, without unduly delaying operations of the Panama Railroad Company.

"The committee further recommends the installation of electric crane No. 3, used in Chamé sand-handling at Balboa, recently dis-

mantled by the Sixth Division, and which is now in the hands of the Quartermaster's Department, to handle the gravel from barges to loading bins. The requirements, as shown by the replies to your letter of May 12, insure at least two years' work for the outfit above named.

"It is proposed by your committee that the marine operations of the gravel outfit be placed under the Sixth Division, and that the shore operations, including construction of wharf and installation of crane, together with the operation of same, be done by the Panama Railroad Company, as the largest users of the supply proposed."

A statement showing the gravel requirements of the various departments for the next two years, beginning with May, 1913, follows:

Department.	Cu. Yds.	Purpose.
First Division.	3,000	At Gatun locks.
	35,000	At Miraflores locks.
	8,600	At transmission line.
	26,400	At substations.
	1,000	At lighthouses, etc.
Total.	74,000	
Atlantic Division.	4,000	For municipal work.
Central Division.	25,000	For ballast.
	25,000	For municipal work.
	400,000	For revetment.
Total.	450,000	
Second Division.	165,000	At Balboa terminal
Sanitary Department.	2,000	Zone sanitation, etc.
Panama railroad.	100,000	For ballast, concrete, etc.,
		etc..
Q. M. Department.	600	Sidewalks.
Fortifications.	2,500	
Grand total.	898,100	

The first gravel pit was opened on the east bank of the river, opposite Gorgona, in 1907. Over 200,000 cubic yards of gravel were reclaimed up to the first of December, 1908, when operations were transferred to a point near the baseball park, since abandoned. Later, the nearest available source of supply was up the river, near the Gamboa bridge. In January, 1911, the area below the bridge was assigned to the Central Division, and that above the river to the Panama railroad. During that season, the railroad company obtained about 75,000 cubic yards from a bed about half a mile above the bridge; the following season another 20,000 cubic yards were taken out, in addition to 75,000 cubic yards further up stream. With the first rise in Gatun Lake, the bed below the bridge was inundated.

A recent examination made of the two beds, one just below, and the other above Cruces village, showed that there are about 300,000 cubic yards still available in the former, and 1,000,000 cubic yards in the latter. Two other beds were noted in this vicinity one on the south side of the river at the Gamboa fluviograph station, and the other between this point and the first bed below Cruces. In all, 25 beds, containing gravel suitable for concrete purposes, were counted between Gamboa bridge and Alhajuela. The gravel is of larger size further up the river, and most of the lower ends of the beds were found to be dirty from Palo Grande to Alhajuela.

The gravel beds continue all the way up to Dos Bocas, where the Rio Chagres and the Rio Pequeni unite to form the main river. The Pequeni flows through a more alluvial country and there is less gravel on its lower course, but the Chagres flows over a gravelly bed for the greater part of its length, causing, where the gravel has formed into banks, a constant succession of rapids, some of which are difficult

of navigation by cayucos, giving this stream the name of "Mad river" among the native boatmen.

Increased Accommodations at East Balboa Hotel and Mess Hall.

The Commission hotel at East Balboa is to be enlarged by a 12-foot extension along the front, which will provide room for 12 additional tables. With the augmentation of work at the Balboa terminals, and especially since the transfer of the Gorgona shop employees began, the table accommodations at the hotel have become cramped. Eight hundred and fifty meals a day are now served, the number having increased 300 during the past three months. Including the additional space, the hotel will have seating capacity for 280 people at one time. The hotel kitchen is also being widened 10 feet at one end to allow the waiters greater freedom of movement. With the employment of more waiters, the quarters for the help in the rear of the hotel became too small, and another building for this purpose, containing nine rooms, has been erected nearby. An annex to the mess hall for laborers, situated on the side of the hill opposite the commissary, which is under the jurisdiction of the steward of the hotel for American employees, has been built recently, and the mess hall kitchen has been newly equipped with a steam boiler, a 60-gallon steam kettle, and a 33-gallon vegetable steamer. At the end of June, there were about 600 Spanish laborers eating at the mess hall, while about 400 West Indians obtained their food supply from the kitchen.

Balboa Agency Retransferred.

Effective Wednesday, July 16, the receiving and forwarding agency at Balboa was retransferred to the Panama Railroad Company, together with the personnel engaged on the work, and on that date, the Quartermaster's Department ceased to act as agent for the railroad. Cargo handling at Balboa was taken over by the Quartermaster's Department on January 1, 1913, after a trial given stevedoring by contract. A reorganization of the work was undertaken, and on January 16, a regular day and night force, with a 9-hour, instead of a 10-hour day, was established. Results showed that about as much work was accomplished under the new schedule as under the old, and the operating cost was materially reduced.

Obituary.

The death of Andrew G. Kitchin, a naturalized American, employed in the Sixth Division, as captain of the tug *Porto Bello*, occurred at Colon Hospital on Monday, July 14. He was a native of Canada, was 47 years of age, unmarried, and had been on the Isthmus nearly five years. Two sisters, the Misses Cassie and Effie Kitchin, live at New Glasgow, Nova Scotia.

John H. Guinther, an American, employed in the Atlantic Division as a carpenter, was killed at Gatun Locks, about 4.30 p. m., on Monday, July 7, by a concrete elevator, which struck him in its descent. He was 29 years of age, unmarried, and had been on the Isthmus nearly seven years. His father, Charles Guinther, lives at Mount Carroll, Illinois.

Cleaning up Lock Chambers.

A general cleaning up of the lock chambers at Gatun will be undertaken shortly, and the superintendent of the McClintic-Marshall

Construction Company has been advised of this intention, in order that he may take steps to clear away all unused scaffolding, and trestles, together with such debris as may have accumulated during the erection of the lock gates, and for which his company is responsible. A similar cleaning up of the floors of the Pedro Miguel and Miraflores locks will be begun soon.

Awards by Joint Land Commission.

The following awards have been made by the Joint Land Commission since last report:

Award No. 5. In the matter of the estate of Baillamonos, supplementary to award No. 1—To Theophilus Archer, \$200; Alexander Campbell, \$65; Lee Cheong, \$20; Victorio Gomez, \$100; Juan Gonzales, \$95; Gabino Gutierrez, \$60; Juan Mendieta, \$225; José Martinez, \$75; Basilio Moran, \$45; Manuel Ochoa, \$135; Joseph Odis, \$100; Daniel Pincock, \$100; Pablo Rodriguez, \$275; Vicente Torres, \$200; Juan Flores, \$200. Total, \$1,895.

Award No. 6. In the matter of the estate of Juan Grande, supplementary to award No. 2—To Juan Diaz, \$30; owner of house No. 1,519, \$30; Rafael Maestre, \$225; William Richards, \$80; Adolphus Samuels, \$40; Thomas Smith, \$45; Samuel Williams, \$1,500. Total, \$1,950.

Award No. 7. In the matter of claims of occupiers located in the area comprised within the relocated line of the Panama railroad and the Canal prism, extending from Gatun to Gamboa—Juan Barcasnegro, \$400; Emiliano Bolano, \$60; Vicente Castillo, \$325; Samuel Davy, \$2,300; Joseph (José) Deterville, \$60; William Findelson, \$100; Eustace Golding (Golden), \$100; Charles McKensie, \$80; Pedro (Federico) Perez, \$50; William Stewart, \$250. Total, \$3,725.

Award No. 8. In the matter of the estate of Mamey y Culo Seco, located on the west bank of the Chagres River—To Isaac Brandon and Brothers, for all their right, title, and interest, including improvements, \$4,515; to the following owners of improvements: Juan Alonzo, \$300; Charles Phillip Bartlett, \$130; Carmen Bello, \$40; Marie Charpentier, \$40; Julian Cianza, \$275; Tereso Cianza, \$175; Alejandro de la Cruz, \$55; Catalino de la Cruz, \$60; Richard Ferguson, \$140; José Isabel Fernandez, \$275; Gerónimo Gutierrez, \$250; José Pilar Guerrero, \$225; Manuel Eugenio Guerrero, \$550; Salvador Isturian, \$85; José Minier (Munier), \$300; Modesto Mosquera, \$40; Julian Polla, \$35; Balbino Reyes, \$130; Carlo Reyes, \$130; Felipe Ruiz, \$125; Manuel Antonio Sanchez, \$210; Mercedes Sorilla, \$225; George Smith, \$100; Rossier Terini, \$20; Brigido Torres, \$40. Total, \$3,955.

Award No. 9. In the matter of the estate of Mamey y Culo Seco, located on the east bank of the Chagres River—To the owners of the land, for all right, title, and interest, including improvements, \$9,285, subject to any equities possessed by third parties; to the following owners of improvements: Roberto Campo, \$20; José Felix Diaz, \$500; Charles Francis, \$55; Polo (Hipolito) Gonzalez, \$500; Sebastian Gutierrez, \$30; Marco A. Posada, \$12.50; Thomas Posada, \$12.50; Elvira Posada, \$12.50; Carmen Posada, \$12.50; Manuel Ramos, \$150; José de la Rosa Rodriguez, \$140; Edward Samuels, \$20; Isaac Samuels, \$50; Tiburcio Valencia, \$125; Heriberto Villaverde, \$30; Timothy Williams, \$40. Total, \$10,995.

Award No. 10. In the matter of the estate of Vamos Vamos, located on the west bank of the Chagres River, between the lands of Peñas Blancas Abajo and Ahorca Lagarto—To Victoria Rodriguez and Juana Paula Rodriguez, for all right, title, and interest, including improvements, \$300, divided equally.

Award No. 11. In the matter of the estate of Palenquillo, located on the west bank of the Chagres River, between the property of Caño Quebrado on one side, and on the other, the lands of Barro Colorado Arriba and Tierras Baldías—To the Palenquillo Tropical Products Company, for all right, title, and interest, including improvements, \$5,000.

Award No. 12. In the matter of the estate of Tabernilla, located on the east bank of the Chagres River, between the lands of Barbacoas and Palenquilla y Frijol Grande—To the owners of the land, for all right, title, and interest, including improvements, \$11,000, subject to any equities possessed by third parties.

Award No. 13. In the matter of the estate of Baillamonos Norte, located on the west bank of the Chagres River, between the properties of Mamey y Culo Seco and Baillamonos Sur—To the following owners of the lands, for all right, title, and interest, including improvements: Dutary C. Remigio, \$300; heirs of Francisco Ardila, \$600; heirs of Vicente Alfaro, \$150; heirs of Luis R. Alfaro, \$150; heirs of Carlos Icaza Arosemena, \$300; to the owners of improvements, as follows: Henry Brown, \$75; Samuel Reid, \$85. Total, \$1,660.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The moving picture reels entitled "From the manger to the cross," were shown at Gorgona on July 6, where there was an attendance of 200, and at Corozal on July 13, where there was an attendance of 300. These moving pictures are the result of months of patient work on the part of the film company. A large company was sent to the Holy Land, where the pictures were made, the scenes being almost invariably laid in the localities in which Christ lived. A great many of the natives of Palestine appear in the production. The acting of those taking the principal parts is reverential and at the same time forceful and dramatic. These exhibitions are the first given on the Isthmus of these particular reels. Exhibitions will be given at the Empire Clubhouse, on Friday, July 18; Culebra, Sunday, July 20; Gatun, Saturday, July 26; and Cristobal, Sunday, July 27.

The regular weekly schedule for moving pictures, July 21 to 26, is, as follows: Monday, Culebra; Tuesday, Gorgona; Wednesday, Gatun; Thursday, Cristobal; Friday, Empire and Porto Bello; Saturday, Corozal.

COROZAL.

The chess match recorded in THE CANAL RECORD of July 2, 1913, as between Corozal and Gatun should have been Corozal versus a mixed team from the Atlantic side. The team which played Corozal was not composed entirely of Gatun men.

Corozal was defeated by a chess team from Culebra on July 9.

High scores in bowling for the week ending July 12 were made by the following: *Tenpins*—Sims, 247; Ziller, 200; Garrett, 201. *Duckpins*—Smith, 103, 115.

EMPIRE

On Sunday evening, July 13, the Tenth Infantry band played the following numbers at the clubhouse, to an audience of about 400 people:

1. March—*Washington Grays*.....Graffula
2. Grand selection—*Les Contes d'Hoffman*..Offenbach
3. Fantasia—*The Sunny South*.....Lampe
4. Selection—*Amorita*.....Czibulka
5. Waltz—*Daughter of Love*.....Bennett
6. Medley—*Popular Hits*.....Arr. by Lampe

The gymnasium and handball classes are well attended. The handball tournament will be started during the week. Ten entries have been received.

GORGONA.

Special music was furnished by Mr. Freedman at the motion picture entertainment, on Thursday evening, July 10.

There is an increased interest on the part of the night men in the afternoon handball games.

Mr. Spencer King is bowling alley manager, taking the place made vacant by the resignation of Mr. Regan, who moved to Culebra. The special features in the bowling alleys are bigpins and candlepins. Mr. King holds the high score for the week, 216.

GATUN.

At present bowling is the most popular activity at the clubhouse. The receipts have doubled since the first of the month. A meeting of the bowlers was held on Monday evening, July 14, when it was decided to conduct a "Lock city bowling tournament" in which six teams will compete. The schedule will be printed in next week's issue. During the past week, two match games were held. On Wednesday evening, July 9, the "McClintic-Marshalls" played the "Lock gate inspectors" and the results were, as follows:

	McC-M.	L. G. I.
1.....	398	402
2.....	426	380
3.....	420	418
4.....	389	390
5.....	407	441
Totals.....	2,040	2,031

On Thursday evening, July 10, the office force of the McClintic-Marshall Construction Company played the field force. W. B. Childers acted as captain of the former, while J. O. Childers led the latter. The results were:

	Office.	Field.
1.....	379	370
2.....	442	399
3.....	392	400
4.....	422	412
Totals.....	1,635	1,581

The present membership of the Gatun clubhouse is 401, which is 60 per cent of the men in town. An effort is being made to increase this number by August 1.

A "smoker" will be given at the clubhouse in the

near future. An interesting program will be arranged.

CRISTOBAL.

A beginners' class in Spanish will be organized on Friday night, July 18. The meetings will be at from 7.30 to 8.30 o'clock on Monday, Wednesday, and Friday nights. The class will be open to all members, and a charge of \$1.50 for the balance of the month will be made. The rate for the full calendar month will be \$3. There is a class in intermediate Spanish, and one in advanced Spanish. Any who wish to avail themselves of the opportunity to study the language are urged to join one of these classes.

A class in shorthand will be organized, providing enough men are interested in its study. Mr. Margon, who has been an instructor in the New York schools, has been procured to give instruction.

It is desired to organize a chess club, and all chess players in Cristobal and Colon are asked to meet in the game room on Monday night, July 21, at 8 o'clock.

The next motion picture entertainment will be given on Saturday night, July 19. There will be music

Red Cross Finances.

A statement of the finances of the Canal Zone Chapter, American National Red Cross, for the month of June, 1913, follows:

RECEIPTS.	
June 1, On hand.....	\$2,425.83
June 4, Return of advance made family at Panama....	15.00
June 18, Return of advance made family at Panama....	20.00
June 24, Membership dues.....	3.00
	\$2,463.83
DISBURSEMENTS.	
June 3, Relief of British subject, ill at Colon.....	\$45.00
June 9, Relief of Austrian, ill with tuberculosis at Colon Hospital, and deported.....	30.00
June 11, Relief of wife of Zone prisoner.....	5.00
June 11, Postage.....	5.00
June 21, Disbursing Officer, printing of letterheads.....	3.87
June 25, Deportation of destitute Colombian family, Colon.....	50.00
June 26, Relief of destitute American, Ancon.....	1.00
June 28, Relief of destitute American, Ancon.....	3.00
	\$142.87
June 30, Balance on hand.....	\$2,320.96
JOHN L. PHILLIPS, Treasurer.	
Edw. Schildhauer, Chairman.	

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending July 26, 1913:

DATE	Low	High	Low	High	Low
July 20.....	A.M.	A.M. 5 13	A.M. 11.20	P.M. 5.23	P.M. 11.37
July 21.....		5.48	P.M. 12 00	6 00	
July 22.....	12 13	6 22	12.36	6.34	
July 23.....	12.50	6.55	1.13	7.08	
July 24.....	1.25	7.25	1.52	7.42	
July 25.....	2.00	8.02	2.32	8.18	
July 26.....	2.38	8.40	3.14	9.01	

75th meridian time.

Sale of Public Buildings at Gorgona and Matachin.

OFFICE OF THE CHIEF QUARTERMASTER.

CULEBRA, C. Z., July 1, 1913.

Sealed proposals will be received at this office until 3 p. m., Saturday, July 19, 1913, and then opened, for the purchase of any or all of a miscellaneous lot of buildings located at Gorgona and Matachin, C. Z. List of the buildings offered for sale and full information relative thereto, can be secured upon application to any district quartermaster, or to this office. Proposals must be accompanied by certified check, post-office money order, or cash, for five per cent of amount bid. Envelopes containing proposals should be marked "Proposal for purchase of buildings" and addressed to the undersigned.

R. E. WOOD,
Chief Quartermaster.

LOST—On evening train, Colon to Panama, Tuesday, July 15, one heavy gold cuff-link, lovers' knot pattern. Reward for return to THE CANAL RECORD office.

LOST—Finder of a package of papers addressed to P. B. Keefer, and of no value except to the owner, is requested to return same to him at Box 164, Cristobal, C. Z.

OFFICIAL CIRCULARS.

New Division of Municipal Engineering.

CULEBRA, C. Z., July 9, 1913.

CIRCULAR No. 183-W:

The following changes in organization will take effect July 16, 1913:

With the exception of the pipelines and pumps necessary to the construction work in Culebra Cut, all municipal engineering work now in charge of the Atlantic, Central, and Fifth Divisions will be consolidated and constitute the Division of Municipal Engineering.

With the approval of the Secretary of War, the Division of Public Works in the Department of Civil Administration will be transferred to the Division of Municipal Engineering.

Mr. Geo. M. Wells will be relieved from duty with the Atlantic Division and assigned to duty as resident engineer, Division of Municipal Engineering, reporting to the Chief Engineer.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Railroad Transportation for Returning Employees and their Families.

CULEBRA, C. Z., July 10, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

Under existing rules an employee on the gold roll upon termination of service is furnished free transportation from his official station or residence on the Isthmus to the port of embarkation. In the future, the families of employees on the gold roll whose services have been terminated may also be furnished free transportation to the port of embarkation. One official business trip ticket may be used to cover both the employee and his family.

GEO. W. GOETHALS,
Chairman.

Organization Charts.

CULEBRA, C. Z., July 8, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS.

Please prepare and submit to this office with the least possible delay organization charts of your respective departments and divisions similar to those which have been published heretofore in the annual reports. These must show the actual authorized organization as of July 1, 1913, and are to accompany the annual report. Tracings of the charts above requested should be 21 inches from top to bottom inside of the border line; the length is immaterial. There should be a 2-inch border for binding on the left-hand side and a 3/4-inch border on the three remaining sides. Departments in which no draftsmen are employed may submit a rough draft of the organization chart, to be completed in this office.

GEO. W. GOETHALS, Chairman.

Card Passes to be Exhibited.

CULEBRA, C. Z., July 8, 1913.

All holders of complimentary card passes on the Panama railroad will be required to present the same to the collector for inspection on each trip.

GEO. W. GOETHALS, President,
Panama Railroad Company.

Time Vouchers.

CULEBRA, C. Z., July 8, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

Your attention is invited to the fact that frequent complaints are being made to this office that employees on the silver rolls who have been laid off and who desire to leave the Isthmus have been refused time vouchers and told they cannot be paid until the next regular pay day.

By my direction, the Examiner of Accounts has recently issued instructions to timekeepers amending Section 102 of the timekeeping rules, as follows:

"Section 102. Time vouchers will be issued to gold employees upon termination of service, or when entering on leave of absence, if requested.

"Time vouchers will be issued to all silver employees whose services are terminated by action of the Commission on account of reduction of force or other causes and who desire to leave the Isthmus.

"Silver employees who voluntarily quit the service may be paid by pay receipt unless they intend to leave the Isthmus prior to the next regular pay day, in which case the time voucher will be issued."

The refusal to issue time vouchers to employees on the silver rolls who have been discharged on account of reduction of force or for other causes, and who desire to leave the Isthmus, very often works a hardship that should be avoided. Time voucher should be issued in all such cases where the employee requests payment, or expresses the intention to leave the Isthmus. In instances where employees on the silver rolls voluntarily

quit the service they should be paid on pay receipt, unless it is the intention to leave the Isthmus, in which case time voucher should be issued.

Such employees should not be permitted to voluntarily quit the service for the purpose of securing pay by time voucher and then immediately return to work in the same or some other division, but where they express the intention to leave the Isthmus, action must be determined by the department or division in which employed and an effort made to verify the stated desire to leave, such as name of ship or steamship company, date of sailing, intended destination, etc., and, in case of doubt, it would be better to request issue of time voucher than to inflict the hardship which might result from a refusal to do so. It should not be required of such employees that they exhibit steamship tickets as very often they have no sufficient funds to purchase their tickets until they have received final pay, and in some cases steamship companies will not issue the class of tickets used by these employees until the day of sailing.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Superintendent, Second Division.

CULEBRA, C. Z., July 8, 1913.

TO ALL CONCERNED:

Effective July 3, 1913, Mr. J. A. Walker will perform the duties of superintendent in charge of construction work, Second Division, Chief Engineer's Office, on Balboa terminals.

H. H. ROUSSEAU,
Assistant to the Chief Engineer.

Gorgona Telephone Exchange Discontinued.

PANAMA RAILROAD COMPANY.
OFFICE OF GENERAL SUPERINTENDENT
COLON, R. P., July 13, 1913.

Effective July 15, the telephone exchange at Gorgona was discontinued. All telephones formerly connected to the Gorgona exchange may be reached through the Empire exchange.

JOHN D. PATTERSON,
General Superintendent.

Family Quarters.

Applications for married quarters on file on June 30 were, as follows:

DISTRICT.	List No. 1.	List No. 2.
Ancon.....	11 (4)	106 (24)
Ancon Hospital.....	1 (1)	5
Balboa.....	56	(1)
Bas Obispo.....	15	(1)
Corozal.....	130	(15)
Cristobal.....	142	(1)
Culebra.....	2	31 (6)
Empire.....	7 (6)	90 (28)
Gatun.....	75	
Las Cascadas.....	29	(6)
Pedro Miguel.....	52	
Porto Bello.....	14	(9)
Toro Point.....	6	
Total.....	21 (11)	751 (91)

NOTE—The figures in parentheses show the number of applicants already occupying regular or nonhouse-keeping family quarters at stations other than those at which applications are filed.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission and Panama Railroad Company, arrived at the ports of Cristobal, Colon and Balboa, during the week ending July 12:

Sixaola, July 6, from New York, with 20 cases washers, 403 bundles shovels, 15 barrels chip soap, 30 barrels rosin, 71 slabs zinc, 30 reels steel cable, 376 bundles corrugated iron, 30 cases soapstone, for stock; 221 pieces structural steel, 135 cases steel doors, for Panama Railroad Company; 18 reels cable, for First Division; 36 pieces car castings, 200 pieces car couplers, for Mechanical Division.

Heredia, July 7, from New Orleans, with 615 barrels paving brick, for Panama Railroad Company; 983 pieces lumber, for Mechanical Division; 13 cases hardware, 943 bales prairie hay, 69 crates handles, 269 pieces cross-ties, 30 pieces piling, 9,125 pieces lumber, for stock.

Emil L. Boas, July 7, from New York, with 60 cases machinery, for emergency dams; 26 cases castings, for First Division; 95 cases paper, 3,138 bundles steel bars, 1,545 bundles galvanized pipe, 217 kegs bolts and rivets, for stock.

Adriano, July 9, from New York, with 56 pieces cast iron pipe, for Atlantic Division; 155 coils wire, 20 cases lamps, 615 packages steel beams, 295 pieces car castings, for Mechanical Division; 232 cases electrical machinery, 49 reels cable, 1,200 pieces structural steel, 214 bundles pipe and fittings, for First Division; 244

bundles steel bars, for Sixth Division; 50 pieces steel plates, for Second Division; 27 cases paper, 10 barrels compound, 11 cases car seals, 24 cases wrenches, 19 bales sand paper, 296 kegs bolts and rivets, 200 pieces steel bars, 61 pieces steel plates, 250 bundles brooms, 73 pieces lumber, for stock; and a miscellaneous cargo, the whole consisting of 4,440 packages, weighing 590 tons.

Almirante, July 9, from New York, with 186 packages structural steel, for Panama Railroad Company; 3,000 pieces hollow tile, for Second Division; nine pieces steel plates, for Atlantic Division; 23 packages valve machinery, for First Division; 10 cases sheet zinc, for stock.

Lyra, July 9, from San Francisco, with 5,000 cases Trojan powder, 13 crates rubber hose, three rolls sheet lead, for stock.

Atenas, July 10, from New Orleans, with 5,940 pieces lumber, 48 pieces piling, for stock; 350 pieces lumber, for Mechanical Division.

The total value of material received during the month of June was \$1,173,391.38, distributed, as follows:

Mount Hope (stock).....	\$382,421.79
Atlantic Division.....	13,285.20
First Division, Chief Engineer.....	334,540.69
Second Division, Chief Engineer.....	231,536.74
Fourth Division, Chief Engineer.....	818.64
Fifth Division, Chief Engineer.....	11,719.59
Sixth Division, Chief Engineer.....	17,983.49
Mechanical Division.....	72,981.68
Sanitary Department.....	5,552.44
Civil Administration.....	140.63
Fortifications.....	23,443.08
Department of Law.....	231.60
Examiner of Accounts.....	627.75
Panama Railroad Company.....	78,108.06

Total..... \$1,173,391.38

The material came forward in 38 steamers; the total weight of cargo, exclusive of lumber, piling and ties, was 20,000 tons.

Rainfall from July 1 to July 12, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
	Ins.		Ins.
<i>Pacific Section—</i>			
Ancon.....	.62	8	1.78
Balboa.....	.51	8	1.18
*Miraflores.....	.51	9	1.69
Pedro Miguel.....	1.01	11	3.19
Rio Grande.....	1.10	7	3.25
<i>Central Section—</i>			
Culebra.....	1.29	7	3.39
*Camacho.....	.79	7	2.48
Empire.....	.80	7	2.90
Gatun.....	1.56	4	5.65
*Juan Mina.....	1.12	7	4.43
Alhajuela.....	1.03	5	3.28
*El Vigia.....	1.29	5	3.35
*Gorgona.....	.75	4	2.94
*Frijoles.....	1.39	4	4.06
*Monte Lirio.....	1.70	1	4.62
<i>Atlantic Section—</i>			
Gatun.....	3.04	1	5.25
*Brazos Brook.....	.94	1	4.46
Colon.....	2.42	9	7.00
†Porto Bello.....	3.30	7	9.80

*Standard rain gage—readings at 5 p. m. daily—automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., July 11.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, July 12, 1913. All heights are in feet above mean sea level.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela	Gatun.	Lake *
Sun., July 6.....	127.1	93.6	50.4	50.4
Mon., July 7.....	131.0	96.8	51.9	50.7
Tues., July 8.....	129.0	94.7	51.8	51.0
Wed., July 9.....	127.6	93.8	51.6	51.4
Thurs., July 10.....	129.6	95.0	52.1	51.6
Fri., July 11.....	127.1	93.6	52.1	51.8
Sat., July 12.....	126.3	92.8	51.9	51.9

Height of low water to nearest foot..... 125.0 91.0 44.0

*Sluice gates in spillway closed on June 27, 1913, with water at elevation 48.25.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.
Retail prices of cold storage provisions for the week beginning July 16, 1913:

FRESH MEATS.		Price
Mutton—Stewing, per pound.....		6
Shoulder, neck trimmed off (4 pounds and over), per pound.....		9
Entire forequarter (not trimmed, 10 pounds and over), per pound.....		8
Leg (8 to 10 pounds), per pound.....		17
Cutlets, per pound.....		18
Short cut chops, per pound.....		20
Lamb—Stewing, per pound.....		6
Entire forequarter, neck trimmed off, per pound.....		9
Legs (5 to 8 pounds), per pound.....		20
Chops, per pound.....		24
Cutlets, per pound.....		24
Veal—Stewing, per pound.....		10
Shoulder, for roasting (not under 4 pounds), per pound.....		12½
Chops, shoulder, per pound.....		17
Chops, per pound.....		26
Loin for roasting, per pound.....		26
Cutlets, per pound.....		30
Backbone, per pound.....		15
Beef—Suet, per pound.....		2
Soup, per pound.....		5
Stew, per pound.....		8
Plate, per pound.....		0
Corned, No. 1, per pound.....		14
Corned, No. 2, per pound.....		12
Chuck, roast, 4 lbs. and over, per pound.....		12
Rib roast, second cut (not under 3½ pounds), per pound.....		16
Rib roast, first cut (not under 3 pounds), per pound.....		18
Pot roast, per pound.....		19
Rump roast, per pound.....		19
Porterhouse roast, per pound.....		20
Steak, Chuck, per pound.....		12½
Round, per pound.....		13
Rib, per pound.....		18
Sirloin, per pound.....		19
Rump, per pound.....		19
Porterhouse, not less than 1½ pounds, per pound.....		20
Tenderloin (Western), per pound.....		30
Pork—Loin chops or roast, per pound.....		17
Hams, fresh, per pound.....		\$20
Shoulders, fresh, per pound.....		\$17
Spare ribs, per pound.....		15
Backbones, per pound.....		15
Pigs' feet, each.....		7
Pigs' heads, ½-head.....		60
Sausage meat, fresh, per pound.....		20
MISCELLANEOUS.		
Livers—Beef, per pound.....		11
Calf, each.....		60
Half, each.....		30
Steak, Hamburger, pkg.....		13
Sausage—Bologna, per pound.....		13
Frankfurter, per pound.....		13
Lieberwurst, per pound.....		13
Devonshire Farm, per pound.....		29
Pork sausage meat, per pound.....		20
Sweetbread, beef, per pound.....		40
Eggs, fresh, dozen.....		27
one-half dozen only.....		14
Bluefish, per pound.....		15
Halibut, fresh, per pound.....		15
Roe shad, each.....		75
Shad roes, pair.....		40
POULTRY AND GAME.		
Chicken—Fancy roasting, mild, per large, each.....		1.40
Fancy roasting, mild, fed, med, each.....		1.10
Fancy roasting, corn fed, about 5½ pounds, each.....		1.25
Fancy roasting, corn fed, about 4½ pounds, each.....		1.00
Fowls, each.....		1.00
Ducks, (Western, about 4½ pounds), each.....		1.25
Broilers, mild fed, each.....		70
Broilers, corn fed, each.....		60
Turkeys, per pound.....		26
Squabs, each.....		50
Rabbits, skinned, each.....		30
Ducks, blackhead, pair.....		60
Partridges, pair.....		1.30
Grouse, per pair.....		1.30
Pheasants, per pair.....		1.30
CURED AND PICKLED MEATS.		
Ham—Sugar cured, per pound.....		20
Sliced, per pound.....		22
Half, for boiling, per pound.....		21
Boiled, per pound.....		28
Hocks, per pound.....		18
Beef, salt family, per pound.....		12
Bacon—Breakfast, whole piece, per pound.....		25
Sliced, per pound.....		26
Ham, lunch, per pound.....		32
Pork, salt, family, per pound.....		14
Ox tongues, each.....		1.00
Pigs' feet, per pound.....		9
Tongues, per pound.....		18
DAIRY PRODUCTS.		
Butter—Creamery, special, per pound.....		34
Sheffield Farms, extra fancy, per lb.....		46

Price.	
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28
Cheese—Edam, each.....	1.00
Edam, tin.....	25
Parmesan, per pound.....	35
Gouda, per pound.....	30
Snappy, per cake.....	10
Milk (Certified), per bottle.....	\$20
Fer-mil-lac, bottle.....	\$20
Ice cream quart.....	125
½-gallon.....	150

VEGETABLES AND FRUITS.

Beets, per pound.....	3
Celery, per head.....	*10
Cabbage, per pound.....	†4
Cucumbers, per pound.....	7
Carrots, per pound.....	3
Cauliflower, per pound.....	†15
Egg plant, per pound.....	*6
Lettuce.....	12
Onions, per pound.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	2
Par-nips, per pound.....	3½
Parsley, bunch.....	†8
Peppers, green, per pound.....	5
Rhubarb, per pound.....	4
Squash, per pound.....	5
Turnips, per pound.....	†4
Tomatoes.....	*6
Apples, per pound.....	†8
Cantaloupes, each.....	8
Grape fruit, tropical, each.....	4
American, each.....	10
Lemons, dozen.....	24
Limes, per hundred.....	80
Oranges, Jamaican, per dozen.....	18
Watermelons, each.....	*35

*Indicates reduction from last list.
†Indicates 5 cents allowed for return of bottle.
‡Indicates advance on last list.
††Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock, next lightest weight is supplied and refund note sent for difference.
‡Sold only from commissaries—no orders taken for delivery.
\$Not less than half of a fresh ham or shoulder will be sold.

Misdirected Letters.

ANCON, C. Z., July 16, 1913.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Adler, Lawrence	Jones, Wm. A.
Baker, Maria Philip	Kane, John
Berglund, Nils	Kerr, B. A.
Browning, Mrs. Margaret	Kruck, Harry
Burns, Thornton R.	Leavigne, Donat
Campbell, A. J.	Massey, A. V.
Chepote, Manuel A.	Morrison, Samuel Thos.
Cnoa, José	O'Brien, Joe
Connell, C. W.	Payne, Robert T.
Copylon, A. C.	Selden, G. D., Jr.
Davis, Mrs. M. H.	Stevens, S. B.
Gascore, Jno. M.	Stone, Hughie
Geary, Edward	Thompson, I. C.
Gittens, Thorington	Thompson, Mrs. Marie
Gordon, Sydney	Voelker, J. S.
Hansen, Miss O.	Welch, Geo.
Iseley, Don B.	Wight, Allan
Jones, A. M. (colored)	Winston, P. P. Jr.

Sale of Towboat "Exotic."

OFFICE OF DEPOT QUARTERMASTER,
MOUNT HOPE, C. Z., June 21, 1913.

Sealed bids will be received at this office until 2 p. m., Tuesday, September 2, 1913, for the steel-hull, stern-wheel towboat *Exotic*, built for the Commission in 1908 by Pusey and Jones, Wilmington, Del., at an approximate cost of \$40,000.

Gross tonnage, 150; two tandem compound engines, 7-inch by 14-inch, 48-inch stroke; two horizontal tubular boilers, Mississippi River type, 44-inches by 190-inches; indicated horsepower, 70; equipped with boiler feed pumps; boat equipped with capstan, steam steering gear, etc.; retired from service in 1911.

This boat can be inspected and further particulars obtained on any working day between 7 and 11 a. m., and 1 and 5 p. m., upon application at this office; any further information desired by intending bidders at a distance will be furnished by letter on request. Right is reserved to reject any or all bids.

Bids should be addressed to the Depot Quartermaster Mount Hope, Canal Zone, plainly marked, "Proposed to purchase towboat *Exotic*, to be opened September 2, 1913."

C. NIXON,
Depot Quartermaster.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Allianca	P. R. R.	Monday	July	14
Colon	P. R. R.	Saturday	July	19
Advance	P. R. R.	Saturday	July	26
Panama	P. R. R.	Friday	Aug.	1
Allianca	P. R. R.	Thursday	Aug.	7
Colon	P. R. R.	Tuesday	Aug.	12
Advance	P. R. R.	Tuesday	Aug.	19
Panama	P. R. R.	Monday	Aug.	25
Allianca	P. R. R.	Saturday	Aug.	30

CRISTOBAL TO NEW YORK.

Panama	P. R. R.	Sunday	July	20
Allianca	P. R. R.	Saturday	July	26
Colon	P. R. R.	Thursday	July	31
Advance	P. R. R.	Thursday	Aug.	7
Panama	P. R. R.	Wednesday	Aug.	13
Allianca	P. R. R.	Tuesday	Aug.	19
Colon	P. R. R.	Sunday	Aug.	24
Advance	P. R. R.	Sunday	Aug.	31

NEW YORK TO COLON.

Santa Marta	U. F. C.	Wednesday	July	9
Carl Schurz	H.-A.	Saturday	July	12
Pastores	U. F. C.	Saturday	July	12
Metapan	U. F. C.	Wednesday	July	16
Magdalena	R. M.	Saturday	July	19
Tivives	U. F. C.	Saturday	July	19
Prinz August Wilhelm	H.-A.	Saturday	July	19
Zacapa	U. F. C.	Wednesday	July	23
Emil L. Boas	H.-A.	Saturday	July	26
Sixola	U. F. C.	Saturday	July	26
Almirante	U. F. C.	Wednesday	July	30
Prinz Joachim	H.-A.	Saturday	Aug.	2
Carrillo	U. F. C.	Saturday	Aug.	2
Danube	R. M.	Saturday	Aug.	2

COLON TO NEW YORK.

Almirante	U. F. C.	Thursday	July	17
Prinz Joachim	H.-A.	Tuesday	July	22
Carrillo	U. F. C.	Tuesday	July	22
Danube	R. M.	Tuesday	July	22
Santa Marta	U. F. C.	Thursday	July	24
Carl Schurz	H.-A.	Tuesday	July	29
Pastores	U. F. C.	Tuesday	July	29
Metapan	U. F. C.	Thursday	July	31
Prinz August Wilhelm	H.-A.	Tuesday	Aug.	5
Tivives	U. F. C.	Tuesday	Aug.	5
Tagus	R. M.	Tuesday	Aug.	5
Zacapa	U. F. C.	Thursday	Aug.	7
Emil L. Boas	H.-A.	Tuesday	Aug.	12
Sixola	U. F. C.	Tuesday	Aug.	12
Almirante	U. F. C.	Thursday	Aug.	14

NEW ORLEANS TO COLON.

Turrialba	U. F. C.	Saturday	July	12
Cartago	U. F. C.	Wednesday	July	16
Abangarez	U. F. C.	Saturday	July	19
Heredia	U. F. C.	Wednesday	July	23
Atenas	U. F. C.	Saturday	July	26
Parismina	U. F. C.	Wednesday	July	30
Turrialba	U. F. C.	Saturday	Aug.	2

COLON TO NEW ORLEANS.

Atenas	U. F. C.	Thursday	July	17
Parismina	U. F. C.	Saturday	July	19
Turrialba	U. F. C.	Thursday	July	24
Cartago	U. F. C.	Saturday	July	26
Abangarez	U. F. C.	Thursday	July	31
Heredia	U. F. C.	Thursday	Aug.	2

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays at 3 p. m. ships for New York via Kingston on Tuesdays at 1.30 p. m. and Thursdays at 1.30 p. m.; for Bocas del Toro on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct, Tuesdays at 3 p. m.

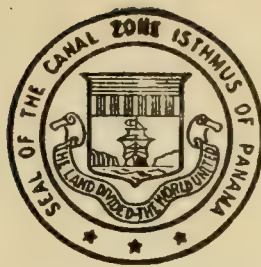
Hamburg-American steamers sail for New York, via Kingston and Santiago de Cuba, on Tuesdays; the *Prinz Joachim* and *Prinz August Wilhelm* at 10 a. m., and the *Emil L. Boas* and *Carl Schurz* at 2 p. m.

The Panamanian Steamship Company's steamer *Panama* will sail from Panama, for Aguadulce and Pedregal, on Sunday, July 20.

The following ships arrived at, or departed from, the port of Balboa during the week ending July 14:

Arrivals—July 7, *Quillota*, from south ports, July 8, *Manavi*, from intermediate ports; July 9, *Pennsylvania* from San Francisco; July 10, *Lyra*, from San Francisco; July 14, *San Juan*, from San Francisco.

Departures—July 7, *Huallaga*, to south ports; July 8, *Santa Maria*, to Port San Luis; July 8, *Lewis Luckenbach*, to San Francisco; July 10, *Agapito*, to Central American ports; July 13, *Ucayali*, to south ports; July 14, *Quillota*, to south ports.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is published free of charge, one copy each to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications,
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission to the Secretary of War for the month of June is published in full in this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Gamboa Dike to be Destroyed on October 10.

Steamshovel operations in Culebra Cut from now on will proceed on the assumption that the dike at Gamboa will be dynamited and water admitted to the Cut on Friday, October 10. All available shovels are to be set at work on the rock sections remaining in the Canal bottom between Cucaracha slide and the Empire suspension bridge, using those that have been working in the less important parts of the Cut, and in terracing operations on the east bank. The shovels engaged in lightening the weight of the west bank in the vicinity of Culebra village are to be continued for the present. Shovel work at Cucaracha slide has been placed secondary to the bottom excavation, and the greater part of the material in this slide, after October, 1913, will be left to the dredges. All accessible moving rock in the slide will, however, be drilled ready for blasting, and fired after the Cut is flooded. At the Tower R incline, there remain about 75,000 cubic yards of material to be removed, which will reduce the curve in the Canal at that point. This work is to be carried on, without interference with the passage of the dirt trains to the north, as long as material can be transported in this direction to advantage. The rock berm on the west side of the Canal at La Pita point will be drilled and charged after the water is admitted, so that the material may be blasted, with the water as a cushion, and later removed by dredges. This arrangement will also apply to the bench that exists on the east side of the Canal between Empire bridge

and Hagan's slide. The incline at Paraiso, used by the dirt trains moving south out of the Cut, will be allowed to remain in service as long as it is found necessary.

Disposition of Pacific Locks Handling Plant.

Proposals for the purchase of the eight steel cantilever cranes, comprising the permanent concrete handling plant at Pedro Miguel and Miraflores locks, were opened in Washington on July 14. Only one bid was received, that of the Chicago House Wrecking Company, which offered \$2,000 for the eight cranes, an average of \$250 each. The bid was ordered rejected, and the Canal Commission has since decided to take down four of the cranes and store the parts on the Isthmus. In furtherance of this plan, contract was let, on Saturday, July 19, to Messrs. J. R. Goodwin and J. W. Wright, to dismantle the cranes at once. The contract price is \$17,500. The cranes to be removed are chamber cranes Nos. 1 and 3, situated at the lower end of the locks at Miraflores, opposite the guide wall; and berm cranes G and H, situated on the west side of the locks. It is proposed to store the parts in the open for the present, but it is possible that later some of them may be utilized in connection with the permanent terminal facilities at Balboa.

Pumps at New Colon Water Works to be Motor-Driven.

The original plan for furnishing the power in the operation of the pumps at the new Colon water works was to utilize the three boilers, two stacks, and three pumps in the old station, but upon examination it was found that their condition would not justify their installation in a new plant. It has now been decided to substitute electrical for steam energy, and to install three motor-driven, single-stage pumps, using 2,200 volts. The average load on these pumps will probably be less than 200 horsepower a day. It is believed that the operating expense will be considerably less with motor-driven than with steam-driven pumps, while the electrical installation will leave a space approximately 28 by 35 feet available for the installation of oil pumps for the fuel oil pipeline system. Power will be obtained from the hydroelectric station at Gatun, when it is in operation, otherwise from the Miraflores steam plant.

Changes in the Mechanical Division.

The position of superintendent in the Mechanical Division has been abolished, and that of assistant superintendent authorized. The latter will have charge of the routine administration work of the Mechanical Division. The position of assistant chief clerk has also been abolished, and his work will hereafter be performed by the chief clerk. It has been decided to consolidate the preparation of all shop work orders, the making of requisitions and the substitution of material

under a material foreman, who will report directly to the chief draftsman. These, with a number of minor changes, are expected to effect a considerable saving in the overhead expense each month.

The abandonment of Gorgona shops was begun on May 1, with the transfer of car work to Empire and Cristobal. The transfer of the planing mill and carpenter shop to the permanent plant at Balboa was begun on July 10. The transfer of the brass, iron, and steel foundries will begin about July 28, while the removal to Empire of the blacksmith, boiler, machine, and erecting shop work will be begun on August 1. The latter arrangement will remain in effect only until such time as the new shops at Balboa are prepared to handle the work. The coach and freight car work transferred to Cristobal shops, and the Lidgerwood and steel car work transferred to Empire shops, will all be concentrated at Balboa as soon as the car and paint shops are ready for occupancy. All machines, tools, and shop equipment will be moved from Gorgona about September 1, and the demolition of all buildings and removal of all tracks completed before October 1.

Equipment for New Balboa Foundry.

Award for supplying an oil burning furnace for annealing various sizes and kinds of steel castings; another furnace for drying molds for steel castings; also, for four oil burning ovens, one for drying large cores for steel, iron, and brass castings, and three for drying smaller cores, all to be installed in the new foundry building at Balboa, has been made to the firm of Tate, Jones and Company, Incorporated, of Pittsburgh, at \$13,740 for the order complete. Delivery is to be made within 90 days from the date of the award.

The annealing furnace will be 18 feet nine inches long from front to rear, and 15 feet six inches high to the top of pulleys. It will be provided with an all-steel car and track, the latter to extend into the shop a distance of 24 feet from the center of the main columns, and will be capable of handling single castings in weight up to six tons, and of steel castings of varying dimensions in total weight up to 15 tons. The furnace will be built to withstand a constant working temperature of 1,600 degrees Fahrenheit.

The mold drying furnace will be 18 feet five inches wide, 27 feet six inches long, and 12 feet six inches high at the highest point. It will be provided with double tracks, and with cars or trucks suitable for transporting all sizes of flasks up to 15 tons. This furnace will be built to withstand a constant working temperature of 800 degrees Fahrenheit.

The larger of the core ovens will be 12 feet six inches wide, 18 feet eight inches long, and 10 feet eight inches high, provided with removable shelves 18 inches wide, spaced 24 inches apart. The oven is to be equipped with track

NOTES OF PROGRESS.

(Continued).

and cars or trucks suitable for carrying various sizes of cores, and will be capable of withstanding a constant working temperature of 300 degrees Fahrenheit.

The three smaller ovens are duplicates, each about three feet wide, four feet long, and six feet high, equipped with shelves of the revolving type. These, as well as the larger oven, will be located in the bay of the foundry, their backs to be against the rear of the large oven. Each of the small ovens will be built to withstand a constant working temperature of 200 degrees Fahrenheit.

The annealing furnace will be provided with six burners, the mold oven with three, the large core ovens with two burners. Each small core oven will be provided with one burner.

The burners are to use either air or steam at from 85 to 100 pounds pressure per square inch, for atomizing the oil and air, at from four to six ounces pressure per square inch, for combustion.

Agricultural Opportunities.

Owing to the heavy demand for the Agricultural Bulletins mentioned in THE CANAL RECORD of July 16, no further copies can be supplied from the Chairman's office. Unfilled requests for copies have been forwarded to the Department of Commerce and Labor, Washington, D. C., to which address future inquiries regarding these bulletins should be made.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the two weeks ending July 19:

DATE.	Hours worked.	Cubic yards.
July 7.....	9.35	2,203
July 8.....	3.55	2,074
July 9.....		
July 10.....		
July 11.....		
July 12.....		
Total.....	13.30	4,277

Crusher plant shut down July 9, 10, 11, and 12, repairing main shaft, on the No. 12 crusher.

DATE.	Hours worked.	Cubic yards.
July 14.....	4.35	1,091
July 15.....	7.05	1,555
July 16.....	7.20	1,691
July 17.....	4.35	625
July 18.....		
July 19.....		
Total.....	23.35	4,962

Changes in Quarantine Against Guayaquil.

To meet the new regulations placed in effect by the authorities at Guayaquil, Ecuador, the following modifications in the local quarantine restrictions against vessels calling at that port have been made:

1. If vessels, after loading at the anchorage in front of the city, proceed down the river and anchor below the Matadero, and are thoroughly fumigated, including cabins, saloons, store rooms, crew's quarters, and the holds, at that point, the quarantine of the vessels will date from the time of sailing from Guayaquil.

2. Vessels not equipped with the Clayton apparatus must have the necessary number of Dutch ovens, pans, etc., placed on board to

insure complete fumigation of the vessel in question.

3. The fumigation must be carried out under the supervision of the medical officer attached to the American Consulate, and must be to his satisfaction, and proper certificate from this officer, or notation on the bill of health that the fumigation has been properly performed, will be required.

4. Passengers cannot be embarked on any vessel until after this fumigation has been completed.

Concrete Work in Locks and Spillways.

Concrete work in the Canal locks is nearly completed, the aggregate amount in place at the close of work on July 19, being 4,469,147 cubic yards.

A statement of the concrete laid in the three sets of locks for the Canal, and in Gatun and Miraflores spillways, as of July 19, follows:

GATUN LOCKS.		Concrete laid
July 14.....		14
July 15.....		8
July 16.....		2
July 17.....		104
July 18.....		86
July 19.....		78
Total.....		532
Previously reported.....		2,341,971
Grand total.....		2,042,513

PEDRO MIGUEL LOCK.		
July 14.....		50
July 15.....		56
July 16.....		75
July 17.....		3
July 18.....		
July 19.....		
Total.....		184
Previously reported.....		921,895
Grand total.....		922,079

MIRAFLORES LOCKS.		
July 13.....		54
July 14.....		15
July 15.....		4
July 16.....		43
July 17.....		113
July 18.....		50
July 19.....		30
Total.....		309
Previously reported.....		1,504,246
Grand total.....		1,504,555

GATUN SPILLWAY.*		
July 14.....		60
July 15.....		168
July 16.....		64
July 17.....		149
July 18.....		141
July 19.....		187
Total.....		769
Previously reported.....		229,543
Grand total.....		230,312

MIRAFLORES SPILLWAY		
July 14.....		172
July 15.....		377
July 16.....		325
July 17.....		256
July 18.....		435
July 19.....		377
Total.....		1,942
Previously reported.....		68,702
Grand total.....		70,644

*Includes hydroelectric station.

In order to minimize unemployment as the Canal force is reduced, the Chief Quartermaster has advised the authorities in the various West India islands that the work is drawing to a close and that for the present there is no market for labor on the Isthmus. The various corporations and individuals which have shown desire to recruit local labor are to be notified when there is an excess in sight, and given permission to recruit, under the usual restrictions. The contract laborers will be repatriated on request.

RELAY AND BOOSTER PUMPS.

Transmission Line for Dredging and Sluicing Operations

The installation of a transmission line from the Miraflores power plant to the east of Gold Hill to furnish power for the operation of two relay pumps on the west bank on the Canal, south of Contractor's Hill; two relay pumps on the east bank, south of Cucaracha slide, and two booster pumps, north of Gold Hill, has been approved. The four relay pumps are to be used by the Sixth Division in connection with dredging operations in Culebra Cut, and the booster pumps, by the Fifth Division, for the hydraulic work back of Gold Hill.

The transmission line proper will consist of three conductors of not less than No. 00 gage, and the stock of No. 00 and No. 0000 copper wire now on the Isthmus, including that ordered for the First Division for the permanent transmission line across the Isthmus, may be drawn upon. In crossing the Cut, the conductors will be suspended from steel cables, and the ends of the latter will be firmly secured and connected, in order that there may be no danger of their parting and falling into the Canal. The conductors will be swung across at an altitude of not less than 345 feet above sealevel. As much as practicable of the present pole line from Pedro Miguel to a point south of Cucaracha slide is to be utilized.

Transformers have been ordered from the Allis-Chalmers Company of Milwaukee, Wis., at an approximate cost of \$9,496, delivery to be made at Colon within 90 days. They are to have a total capacity of 1,500 kilowatts, and are to be 25-cycle, at either 6,600, or 11,000 volts, with a primary voltage of 2,200. The transformers are to be installed in a substation to be located on the west face of Gold Hill, and from there power will be transmitted to the four relay and two booster pumps. The transmission line will be installed for a primary voltage of 11,000, and as it is to furnish power to the motors for the Gold Hill engine house, operated by the Mechanical Division, in addition to the above pumps, and possibly for other purposes at some future time, the cost of its erection and maintenance will be charged to a new plant account to be designated by the Examiner of Accounts.

It is desired to have the relay stations on the west bank of the Canal, south of Contractor's Hill, ready for operation by October 1, and the booster pumps about September 1, or as soon thereafter as power can be supplied. With this in view, the work on the transmission line will be carried on as rapidly as possible, in order that it may be operated as soon as the transformers are received and installed.

Cleaning Concrete Surfaces.

A wash, consisting of a dilute solution of hydrochloric acid, one part of commercial 30 per cent acid to five parts of water, has been found effective in cleaning the stains, due to weather, and other causes, from the concrete surfaces of the lock walls. A test was recently conducted on the center wall lamp standards of the middle lock at Gatun. The surface of the concrete was brushed over with the solution, and afterward was rinsed with clear water. The application and subsequent rinsing freed the concrete of all discoloration. The process has proved satisfactory, but will be kept under observation before further work is done.

SOCIAL LIFE OF THE ZONE.

Culebra Christian League Disbands.

The Culebra Christian League formally disbanded at a public meeting held in the Commission chapel at Culebra, on Tuesday evening, July 15. The occasion was also in the nature of a farewell reception to the retiring chaplain of the league, the Reverend A. A. Nellis, who, with his family, sailed on the *Cristobal*, on Monday, July 21, for the United States. The reception was preceded by a program in which the following took part: Messrs. Ramsey, Arbuckle, and C. C. Pear-sall; Mr. and Mrs. George R. D. Kramer, and Mr. Silver of Culebra. The history of the league was read by its president, Mr. J. F. Warner. Following the farewell address of the chaplain, a copy of a resolution of thanks voted by the league, and prepared by Mr. William Dubois in suitable form for framing, was presented him by Mr. F. W. Leydecker, and, in addition, a substantial testimonial of good will was made on behalf of the league by its treasurer, Mr. A. W. Bechlem. During the social session which followed, refreshments were served. About 125 were present.

The organization of the league was one of the first efforts in undenominational church work to be undertaken by Canal employees. The first steps were taken in 1906, and, in February, 1908, an organization was effected. Prior to this time, religious services in Culebra village had been confined to the occasional visit of a minister, and Sunday school work. The preaching services were variously held in the building used for school purposes; in a room in the old postoffice, and in the hotel building. While no records have been kept, it is believed that a Sunday school was organized toward the end of 1905. In the beginning of the following year, the work seems to have suffered somewhat from changes in the Canal personnel, and from other causes, but in September, 1906, the Sunday school movement was revived, and by Christmas, there was an enrollment of 50 pupils, with an excellent average attendance. Preaching services were held regularly, and a young people's society, similar to the Young People's Society of Christian Endeavor and the Epworth League, was formed. An organ, suited to the tropics, was purchased in 1906, and singers and organists volunteered their services, thereby creating additional interest in the meetings.

About this time it became obvious that an organization to meet the religious needs of the American population was necessary. There were not enough members of any one denomination to warrant the division of church life into the usual sects, but it seemed that there must be some provision whereby the young people might develop along the lines of moral and spiritual growth. In the effort to evolve a plan for carrying out these objects, the meetings were often converted into discussion clubs. The feature most strongly emphasized was that any local religious work, to be successful, must be undenominational. A formal statement, as a basis for a union, was drawn up and read at a meeting held in October, 1907, at the home of Mr. W. J. McLaughlin. The plan was agreed to, and 16 persons signed the document. This was the real beginning of the Culebra Christian League. Another meeting was held on February 13, 1908, at which the action of the previous meeting was ratified, and a com-

mittee was appointed to submit a report on a constitution and by-laws.

The Canal Commission agreed to cooperate with the efforts of the league to the extent of appointing a chaplain to be attached to the hospital service. This concession on the part of the Canal Commission relieved the league of the responsibility of fixing a suitable salary for its pastor, although in May, 1908, a ruling was adopted that the league pay the sum of \$25 monthly for the chaplain's services, in addition to his salary as hospital chaplain. The first to be called was the Reverend J. W. Holland of Aurora, Ill. He arrived on the Isthmus on October 28, 1908, and served until August, 1909. Under his leadership, the league prospered, and the young people's society became an important feature of the work. The Reverend Mr. Nellis was the next chaplain, arriving on the Isthmus in February, 1910. The result of his labors is indicated by the expressions of esteem accorded him by his fellow workers at the farewell meeting.

Past presidents of the league have been, Mr. J. M. Weaver, Mr. F. C. Freeman, and Mr. E. E. Lee. The average attendance for the past four years has been, as follows: 1910, 36; 1911, 26; 1912, 34; and to date in 1913, 28. The following list, taken from the early records, indicates members of various denominations that have united in the work of the league: Methodist Protestant, 1; Methodist Episcopal, South, 1; Free Baptist, 1; Reformed, 1; Episcopalian, 7; Unitarian, 2; Methodist Episcopal, 14; Baptist, 11; Universalist, 1; Congregational, 4; Presbyterian, 18; Christian, 2; Evangelical, 4; Dutch Reformed, 1; Moravian, 1.

The later addition of a member of the Society of Friends practically completes the universality of support given the organization by members of Protestant churches. Some of the members brought letters from their home churches; others joined on statement of church connection. The league issued an attractive card to each member, many of which were sent to members in the United States to be used as transfer cards, or for verification of church connection during residence in the Canal Zone. Transfer cards were also issued to Sunday school pupils who were transferred to some other point on the Isthmus, or who returned to the United States.

The Culebra Sunday school will continue to meet as usual in the chapel. There will be no break in the Sunday evening meetings, the charge of such services having been undertaken by the Young Men's Christian Association.

Evangelist Speaks.

The Reverend Alfred B. DeRoss, the evangelist whose field of work has been Central America, spoke before the young people's meeting at the Union Church, in Cristobal, on Sunday evening, July 13. On the same evening, the pastor of the church preached at the 7.45 service, on "The hero of the dark continent."

Lodge Notes.

Isthmian Canal Rebekah Lodge, No. 1, will hold its regular meeting in the Commission lodge hall at Empire, on Saturday evening, July 26, at 8.30 o'clock. The following newly elected officers will be installed by District Deputy B. F. Sisson of Gatun: Noble grand, Mrs. Clara Rhodes; vice-grand, Mrs. Ida

Johnson; recording secretary, Mrs. S. B. Bewley; financial secretary, Mrs. Mollie Perry; treasurer, Mrs. Mamie Vickery; trustee, Mrs. Annie Calvit. At the close of the meeting an informal reception will be held, during which refreshments will be served. All members are requested to be present, and all Rebekahs in good standing are invited.

The Pythian Sisters, with headquarters at Las Cascadas, will hold an installation of officers on Thursday, August 7. The lodge meetings are held in the Commission lodge hall on the first and third Thursdays of each month. A dinner is given once a month at the home of one of the members. In point of membership and interest, the standing of the auxiliary is as prosperous as it has been since its organization.

Officers of Pacific Lodge, No. 4, I. O. O. F., were installed at Ancon Hall on Thursday evening, July 17, as follows: Noble grand, A. F. Holzapfel; vice-grand, K. P. Curtis; treasurer, A. S. Curtis; secretary, Emil J. Rall; warden, O. E. Granberry; conductor, E. E. Price; chaplain, Wm. H. Stone; right supporter to noble grand, Jas. C. Young; left supporter to noble grand, Geo. C. Olsen; right supporter to the vice-grand, J. L. Webster; left supporter to the vice-grand, C. C. J. Wirz; inside guardian, B. H. Post.

On Tuesday evening, July 8, the following officers were installed by Ancon Lodge, No. 8, Knights of Pythias: Chancellor commander, W. H. Clapp; vice-chancellor, E. C. Bunker; prelate, A. F. Holzapfel; master of work, D. R. Wolverton; keeper of records and seals, and master of finance, S. C. Russell; master of exchequer, E. B. McCormick; master at arms, O. M. Ewing; inner guard, R. H. Hull; outer guard, C. P. Hoffman.

Canal Zone Postal Savings Bank Transactions.

A statement of the postal savings bank transactions at Canal Zone postoffices for the month of June, follows:

NAME OF OFFICE.	Postal savings certificates issued.	Postal savings certificates paid.
Ancon.....	\$13,832.00	\$8,269.00
Balboa.....	11,787.00	16,200.00
Bas Obispo.....	1,480.00	1,319.00
Corozal.....	25,408.00	17,120.00
Cristobal.....	13,009.00	9,540.00
Culebra.....	8,469.00	10,829.00
Empire.....	11,728.00	8,810.00
Gatun.....	12,370.00	17,421.00
Gorgona.....	12,491.00	19,601.00
Las Cascadas.....	9,706.00	9,159.00
Matachin.....	1,264.00	406.00
Miraflores.....	5,782.00	5,473.00
Paraiso.....	10,488.00	9,040.00
Pedro Miguel.....	11,475.00	15,363.00
Cristobal, Sta. "A".....	1,145.00	490.00
Cristobal, Sta. "B".....	1,026.00	2,200.00
Total.....	\$151,460.00	\$151,240.00
Deposits on hand on June 1, 1913....	\$645,470.00	
Amount deposited in June.....	151,460.00	
Amount withdrawn in June.....		\$151,240.00
Balance on hand July 1, 1913.....		645,690.00
	\$796,930.00	\$796,930.00

Tile Manufacture.

The output of tiles manufactured by the American Cement Tile Manufacturing Company at its plant at Paraiso, up to June 25 was, as follows: Gutter tile, 145.77 squares; standard tile, 52-inch, 3,058.72 squares; special tile, 166.90 squares; skylight tile, 2,847 pieces; ridge tile, 3,590 feet.

CANAL ZONE SCHOOLS.

Records of Attendance and Changes, and Comparative Figures.

The Canal Zone public schools closed on June 30, to reopen on October 1. During the year, 29 graded schools were maintained, 14 schools for white children, and 15 schools for colored children. There was a steady increase in the number of children enrolled each month. The highest enrollment was in June, 1913, when the total for all schools was 2,949, divided, as follows: Schools for white children, 1,369; schools for colored children, 1,580. The highest daily attendance in the combined schools was in March, 1913, when, out of an enrollment of 1,334 in the schools for white children, the average daily attendance was 1,034.4; and out of an enrollment of 1,470 in the schools for colored children, there was an average daily attendance of 819.3. The largest graded school for white children was at Ancon, with an enrollment for the year of 246; the second was at Cristobal, with 224 enrolled. Of the schools for negro children, the largest was at Cristobal, where there were 340 enrolled; and the second at Ancon, with 239. There were 93 pupils in the high school, the largest number ever enrolled. In all schools the highest enrollment was in the first grades, 315 in the schools for white children, and 577 in the schools for colored children. At the close of the school year, there were 47 teachers employed in the schools for white children and 32 in the schools for colored children. In addition, there were two supervisors for all the schools; one primary substitute, and one upper grade substitute for the schools for white children, one teacher employed as gardener for the schools for colored children and two supervisors of children who were employed during the noon recess.

The consolidation of several of the elementary schools made it possible to operate a few well-graded central schools, to which children living in contiguous territory, were transported by brake. A supervisor of children was in attendance at the school building during the noon hour, so that the pupils who could not go home for lunch, were never without adult care. Children residing at longer distances were allowed train transportation to the nearest school.

At the opening of the school year, the consolidated high school was transferred from Gatun to Ancon, and branch high schools for first and second year courses were established at Gatun and Empire. New schools were opened, as follows: Lower grade school at Toro Point on October 14, 1912; one for first, second, and third grades at Corozal on October 28, 1912, and one for third and fourth grades at Las Cascadas on May 13, 1913. Two new rooms were opened in the school for colored children at Cristobal, one on December 9, and the other on December 15, 1912, making it a 6-room school; one additional room was opened in the Empire school on December 9, 1912, making it a 4-room school; and one room was opened in the Gatun school on April 1, 1913, making it a 3-room school. Twenty-nine buildings have been in use for school purposes during the year, including the rooms in buildings other than those constructed especially for school use. The latter were, as follows: One room each in the Commission hotel and church building at Las Cascadas; one room in the recreation hall at Toro Point; one in nonhousekeeping quarters at Porto Bello, and one in a church

building at Majagual. At the end of the school year, the schools for white children at Gorgona and Toro Point, and the schools for colored children at Gorgona and Matachin were closed permanently.

Medical inspection of schoolchildren, which was established in 1908-09, was continued. Of the 1,044 children examined for nose, ear, throat, and teeth conditions, a percentage of 40.8 was found defective.

The school garden at Empire, operated in connection with the school for colored children at that point, gave successful results. It comprises two and one-half acres of ground, of which one-half of an acre was devoted to truck gardening, and the remainder to the growing of bananas, papayas, cocoa, and other native products. The total value of the products raised was \$348.35, beans being the largest single item. The school garden at Culebra was abandoned on November 23, 1912.

Holidays and vacations were observed, as follows: Independence Day of Panama, November 3; Thanksgiving Day, and the Friday following, November 28 and 29; Christmas holidays, December 21 to January 1, inclusive; Washington's Birthday, February 22; Easter holidays, March 15 to 23, inclusive; Decoration Day, May 30.

The growth of the schools since 1906 is shown in the following table:

Number of Pupils.

October.	White	Colored	Total
1906.....	176	1,565	1,741
1907.....	721	2,146	2,867
1908.....	745	1,067	1,812
1909.....	931	906	1,837
1910.....	1,076	903	1,979
1911.....	1,157	1,042	2,199

Number of Teachers.

October.	White	Colored	Total
1906.....	.....	.....	121
1907.....	.....	.....	130
1908.....	23	20	43
1909.....	37	21	58
1910.....	40	25	65
1911.....	45	27	72
1912.....	48	28	76

Number of Buildings.

October.	White	Colored	Total
1906.....	.....	.....	18
1907.....	.....	.....	30
1908.....	11	14	25
1909.....	11	16	27
1910.....	9	15	24
1911.....	11	15	26
1912.....	13	15	28

Figures for years prior to 1911 show gross enrollment of pupils; figures for 1911 and 1912 show net enrollment of pupils:

*Approximate.
*The number authorized October 31, 1910; 37 and 24, respectively, employed in that month.

*The number authorized October 31, 1911; 43 and 24, respectively, employed in that month.

*Includes 4-room colored school building under construction at Ancon, November 6, 1911.

The establishment of a Canal Zone public school system was authorized by the Isthmian Canal Commission in 1904, but, owing to press of other work, no action was taken in organizing the school until December, 1905, when a census of children of school age was taken. The first school was opened at Corozal on January 2, 1906. At the close of the first term, which ended September 30, 1906, there were 30 schools, with an enrollment of 1,796, including both white and colored children. Prior to this time, the schools were administered by the Division of Revenues; from May to No-

vember, 1906, they were under the Bureau of Municipalities, and after that time, the Division of Schools was organized and placed under the Department of Civil Administration. During the first year of this administration, the school year was divided into four terms of equal length, but during the following year, the term was made continuous by resolution of the Canal Commission, the school year covering the period from October 1 to June 30, with holidays and vacations as shown above.

Fatal Accidents.

Maria Conong, a Panamanian woman, living at Peña Prieta, near Panama city, was struck by I. C. C. engine No. 227, about 100 yards north of the East Balboa commissary, on Monday, July 21, at about 5.15 p. m., receiving injuries from which she died at Ancon Hospital half an hour later.

Edwin Carrington, a Barbadian, employed as a carpenter in the Quartermaster's Department, received fatal injuries on Saturday, July 19, by a section of a house, under re-erection in Bishop's Hollow, Ancon, falling on him. He died at Ancon Hospital on Tuesday, July 22.

Fred Linday, a Barbadian, check No. 177-792, fell between the cars of a labor train at Balboa, on Tuesday, July 22, at about 6.15 a. m., and was instantly killed.

John E. Priel, alias John Pryan, a St. Vincentian carpenter, employed at Balboa, died at Ancon Hospital on July 8, from injuries received while wrestling at the Panama bathing beach on July 4.

William Lennon, a Jamaican laborer employed in the First Division, at Paraiso, died at Ancon hospital on July 15, as the result of injuries sustained by being crushed between a locomotive crane and a staircase at the west wall of Miraflores Locks on June 21.

Simeon Reid, Jamaican, check No. 141730, employed in the First Division at Gatun, became caught between the bed and carriage of crane No. 81, on July 1, and received injuries from which he died.

Estimated Cost of Materials Ordered on United States Requisitions.

The estimated cost of material and supplies ordered on United States requisitions during the fiscal year ending June 30, 1913, by departments and divisions is, as follows:

Atlantic Division.....	\$124,802.91
Pacific Division.....	165,294.05
Mechanical Division.....	723,795.38
Quartermaster's Department.....	2,358,856.25
Chief Engineer.....	10,714.17
W. G. Comber—Sixth Division.....	308,605.92
H. O. Cole—Fifth Division.....	56,279.75
H. D. Hinman—Second Division.....	129,340.45
Chief Engineer—First Division.....	2,171,580.58
Terminals.....	1,194,625.00
Panama railroad.....	559,517.56
Superintendent of erection.....	29,807.18
Fortifications.....	154,646.45
Lighthouses.....	5,305.45
Secretary of Commission.....	853.00
Examiner of Accounts.....	2,115.00
Disbursing Officer.....	10.25
Central Division.....	903.75
	\$7,997,053.10
Quartermaster's Department, annual contracts.....	1,715,681.51
Total construction and engineering.....	\$9,712,734.61
Sanitary Department.....	\$59,139.61
Civil Administration.....	1,674.30
Canal Zone Government.....	5,230.94
Department of Law.....	1,506.00
Police Department.....	1,158.35
Department of Schools.....	528.37
	69,237.57
	\$9,712,734.61
Grand total.....	\$9,781,972.18

CANAL WORK IN JUNE.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., July 14, 1913.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of June, 1913:

Department of Construction and Engineering.

The following table summarizes the principal items of work accomplished by the construction divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	2d Div.	5th Div.	6th Div.	Total.
Work excavation, dry.	Cubic yds...	388	808,009	100,991	229,894		1,139,282
Work excavation, wet.	Cubic yds...	814,592	*57,274	†31,179		604,080	1,507,125
Total work excavation	Cubic yds...	814,980	865,283	132,170	229,894	604,080	2,646,407
Plant excavation, dry.	Cubic yds...		13,017				13,017
Total Canal excavation	Cubic yds...	814,980	878,300	132,170	229,894	604,080	2,659,424
Material placed in dams	Cubic yds...	99,457			11,800		111,257
Concrete placed, locks, dams and spillways.	Cubic yds...	6,074			26,568		32,642
Explosives used.....	Tons (Gross)	12.89	54.98	11.30	24.61	15.10	118.88
Rock drilled.....	Feet	11,650	177,420	29,750	71,235	10,645	300,700
Tracks removed.....	Miles	0.18	3.66	1.00			4.84
New tracks laid.....	Miles	0.94	12.77	4.05	1.04		18.80
Rock crushed.....	Cubic yds.				51,446		54,446
Cement used.....	Barrels	14,371	403	2,850	25,778	45	43,447
New roads built.....	Miles	.08			.28		.36
Water mains laid.....	Feet	1,200			8,767		9,967
Sewers laid.....	Feet	120	250		1,828		2,198
Open drains and ditches dug.....	Feet.....	5,403		3,250	132		8,785
Average daily force.....		3,395	7,082	1,866	5,375	2,260	19,978
Average rainfall.....	Inches.....	11.26	9.14	7.15	9.00	7.15	9.35

*Removed by Fifth Division for Central Division.

†Removed by Sixth Division for the Second Division.

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the construction divisions and the erection subdivision of this office, the inspection of this work being cared for by the masonry and lock structures subdivision. This subdivision was also charged with the general inspection of the masonry work of all locks. Work was continued on the preparation of rising stem gate valve machinery chambers, and inspection reports show that practically all of this work at the different lock sites is completed. On June 30, the subdivision was abolished.

LOCK GATES AND PROTECTIVE DEVICES.

The status of the work in the several locks may be summarized, as follows:

Gatun—Work in progress on all the leaves, 40 in number: Erection, 98.3 per cent completed; reaming, 99.8 per cent completed; riveting, 97.8 per cent completed; finishing, 67 per cent completed.

Pedro Miguel—Work was in progress on the entire 24 leaves: Erection, 98.1 per cent completed; reaming, 99 per cent completed; riveting, 95 per cent completed; finishing, 62 per cent completed.

Miraflores—Work was in progress on all of the 28 leaves: Erection, 93.6 per cent completed; reaming, 93 per cent completed;

riveting, 77.5 per cent completed; finishing, 38 per cent completed.

ERECTION.

The lower guard gates at Gatun were finally completed and painted June 14, 1913, with the exception of the bitumastic enamel in the air chamber which is now being applied. Water was pumped into the tail bay, and the gates are now under the full hydrostatic pressure they were intended to withstand. They are remarkably watertight, no leaks being evident. The upper guard gates and lower guard gates at Pedro Miguel, and the upper guard gates at Miraflores were also completed during the month.

per cent of single, and 33 per cent of double crossovers have been placed.

Spillway gate machines—All machines are on the Isthmus. At Gatun, 54 per cent of the mechanical, and 1.8 per cent of the electrical work is done on the spillway erection. Concrete work at Miraflores will not yet permit of machinery installation.

Pumps—Pumps and motors, with float switches and starters, have been received complete, except chain fender operating pumps and motors. Installation, both electrical and mechanical, is approximately 21.08 per cent complete.

Transformer room equipment—Transformers for lighting and power have been received complete, with approximately 32 per cent of all switchboards and buses for transformer room equipment installed. Work is practically complete on 35 per cent of all rooms, and has been started on another 30 per cent. All other material used in this construction, such as bells, tape, varnish, solder, etc., is on the Isthmus.

Hydroelectric station—All structural steel, turbines, penstocks, generators, exciters, head gates, gate operating machinery, and traveling cranes are on the Isthmus. All foundations have been built, and the three turbines and their penstocks set complete. The head gates have been set. The switchboard and transformer equipment have been contracted for, but not received.

Cable—Of the 2,372,110 feet of cable ordered, about 93 per cent has been delivered, and 462,729 feet pulled into the ducts.

Control houses—All steel beams for the floors have been received, and 15 per cent placed in the concrete. No other structural steel has been received.

Illumination—Reflectors for interior and exterior illumination are being manufactured on the Isthmus, and satisfactory progress is being made. Concrete lamp posts are being made by the Atlantic and Fifth Divisions, according to plans from this office. At Gatun, 120, out of 211, are erected.

Control apparatus—Practically all control apparatus for the locks and spillways is on the Isthmus, except the main control switchboard with interlocking system and indicators, none of which has been shipped from the factory.

Transmission line—Deliveries of transmission line material have not begun, except for copper conductor, which is 29 per cent complete. Work on surveys is practically complete, and work has been started on the installation of foundations for track-span bridges to carry transmission line towers.

EMERGENCY DAMS.

Inspection was in progress in four localities in the United States, and 852 tons of material were accepted during the month. This completes the inspection of all material necessary for the six dams, except for a few replacements. Practically all material has been shipped. Work was in progress on all the dams. About 70 per cent of all material required for the six dams is on the Isthmus, and approximately 62 per cent has been erected.

On May 20, the contractor began the final tests of the east dam at Gatun, the total time for closing the dam in the first test being one hour one minute and 30 seconds. After three complete operations of the dam had been made, the contractor began the second part of

INSPECTION AND ERECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

Valve machines—All rising stem valve, cylindrical valve, and auxiliary culvert valve machines have been received complete, and to date the status of mechanical erection complete is: 91.75 per cent for rising stem valve machines, and 100 per cent for cylindrical valve, and auxiliary culvert valve machines, respectively. The delivery of electrical material for the above machines is complete, and the electrical installation 39.2 per cent complete for the rising stem valves, 41.62 per cent complete for the cylindrical valves, and 46.6 per cent complete for the auxiliary culvert valves. Delivery for 18 guard valve machines is 33.3 per cent complete, and erection 31.6 per cent complete. Electrical work has not been begun, although the material is on hand.

Miter gate moving machines—The complete shipment of miter gate moving machines has been received, and 85.52 per cent of mechanical erection is completed. Electrical installation of these machines is 24.2 per cent complete.

Miter gate forcing machines—Deliveries are 100 per cent complete. Mechanical erection is 9.36 per cent complete. Electrical erection is in about the same stage as that of the miter gate moving machines.

Tracks—Delivery of all track material is complete. Forty-six per cent has been completed with concrete and conductor slot, and 4.7 per cent more distributed and bolted up ready for concreting and finishing. All crossover material has been received; to date, 25

the tests, consisting of operating the turning and wedging machinery for twenty days, at intervals, depending upon the heating of the motors. After completing the second part of the tests, three additional complete operations were made in accordance with the contract. The last of these tests was made in 42 minutes and 17 seconds, which is 19 minutes and 13 seconds less than the time required for the first test. The time consumed in the actual operation of the various parts of the dam varied but little for the different tests, the variation in no instance being more than five seconds. The only exception to this was the turning of the dam into position across the lock chamber, the minimum recorded time for which is one minute and 29 seconds, and the maximum time two minutes and 22 seconds. The time recorded for the actual operation of the various parts of the dam in the last test was, as follows:

PARTS	Time.	
	Mins.	Secs.
Drawing wedges		19
Turning dam	1	44
Drawing wedges		20
Lowering gates No. 1	4	40
Turning dam into position for gate No. 2	3	2
Lowering gates No. 2	3	35
Turning dam into position for gate No. 3	3	49
Lowering gates No. 3	3	3
Turning dam into position for gate No. 4		40
Lowering gates No. 4	2	32
Turning dam into position for gate No. 5		49
Lowering gates No. 5	2	2
Total	24	23

As stated above, the time required to bring the dam into position was 42 minutes and 17 seconds; thus it will be seen that the time lost in the various operations was 17 minutes and 54 seconds. The minimum time in which the dam was brought back to its original position was one hour 27 minutes and 59 seconds.

AIDS TO NAVIGATION.

During the month, work was in progress erecting range tower No. 27, Gatun Lake section; setting range lenses in towers Nos. 12 and 13, Pacific end; constructing submarine foundations for the Santa Cruz beacon; clearing land for the Central and Sixth Divisions; and making the necessary surveys and reconnaissances in Gatun Lake in connection with the construction of range towers, reference targets, and beacons.

Second Division—Office of the Chief Engineer.

SHOPS.

Studies and plans for the various buildings, machine foundations, motorizing of machines, and illumination system, were advanced during the month. The system of distributing electrical power in the planing mill, and the design for the distribution in the foundry, and in the machine and erecting shops, were completed. The interior illumination system in the planing mill was completed, and the design for that system in the foundry and pattern storage was also completed. Orders were given for the material for walks in roof trusses, and for supports for all piping in the permanent shop buildings; for the supports for four jib cranes to be erected in the foundry, and for manhole covers in the tunnel. Specifications were prepared, and requisition submitted, for one 96-inch by 132-inch by 24-foot open-sided extension planer; one double-head engine lathe; one 500-ton forging press; six 5-ton pillar cranes for forge shop, and 48 slate stalls

for fittings, for urinals, closets, and showers. The following awards were made: Twenty-six slip-ring motors, 56 squirrel-cage motors, 23 D. C. motors, 43 autostarters, and three oil switches to the General Electric Company; five squirrel-cage motors to the Westinghouse Electric and Manufacturing Company; one annealing furnace, one mold oven, and four core ovens to the Tate-Jones Company. Excavation for shop foundations amounted to 1,005 cubic yards, and for the shop tunnel, 75 cubic yards. A total of 489 cubic yards of concrete was placed in shop foundations, and 765 cubic yards in the tunnel. Filling on the site of the shops and yards amounted to 73,538 cubic yards. A total of 492 linear feet of tunnel was constructed. All structural steel for the machine and erecting shop, steel storage building, and paint shop and oxy-acetylene building was delivered on the Isthmus. During the month, 2.7 per cent of the structural steel for machine and erecting shop, 18 per cent for the planing mill, 72 per cent for the pattern storage building, and 70 per cent for the foundry, was completed. The erection of the structural steel for the planing mill, and for the pattern storage building, was completed. During the month, 77.9 squares of gutter tile, 693.4 squares of standard tile, 37.4 squares of special tile, 1,142 pieces of skylight tile, and 790 feet of ridge tile, were manufactured. On the planing mill, 75 per cent of the several kinds of tile, and 5.7 per cent of skylight glass were erected.

DRY DOCKS.

Plans were prepared for the granite required for miter gate of dry dock No. 1, and for caisson seats of dry docks Nos. 1 and 2. Studies for pumping plant and supports for caisson seats of dry dock No. 1 were continued. Plans and specifications were prepared for valves to control flooding dry docks Nos. 1 and 2, and the drainage of dry dock No. 2. Work on the design of the floating caisson for dry dock No. 2 was started. Excavation for dry dock No. 1 amounted to 73,458 cubic yards.

COALING PLANT.

Proposals for coal handling machinery and accessories have been received and are under consideration.

WHARVES AND PIERS.

Work was continued on plans for the two sections of the quay wall, and drawings were made for a landing bridge for small boats. Excavation for the quay wall amounted to 2,552 cubic yards; 27 caissons were sunk to rock, with a total penetration of 1,068 linear feet; excavation for pier No. 1 amounted to 2,051 cubic yards, 12 caissons were set into rock, having a total penetration of 1,026 linear feet.

Fifth Division—Office of the Chief Engineer

DISTRICT NO. 1—LOCKS, DAMS, AND DRY EXCAVATION.

Excavation.—The total excavation amounted to 229,894 cubic yards, of which 162,810 cubic yards were classified as rock, and 67,084 cubic yards as earth.

Filling and embankment.—Dry filling in the prism of the west dam at Pedro Miguel was increased by 3,580 cubic yards, the total amount of material used for this purpose being 696,558 cubic yards. The backfill at Pedro Miguel was increased by 13,535 cubic yards, the total quantity in place at the close of the

month being 1,013,323 cubic yards. At Miraflores, the dry filling in the toes of the west dam was increased by 11,800 cubic yards, making the total quantities of dry and hydraulic filling in place at the close of the month 1,659,999 cubic yards, and 661,048 cubic yards, respectively. The backfill at Miraflores was increased by 109,622 cubic yards, the total quantity in place on June 30 being 1,672,227 cubic yards.

Pedro Miguel Lock.—The work of backfilling the lock and filling the north and south guide walls was practically completed. Rock was supplied from Ancon quarry for riprapping along the north face of the west dam and junction with the wing wall, also for the south wing walls. The concrete work of the control house was completed to the elevation of the first floor, and the steel floor beams and girders were set. Other concrete work consisted in the installation of lamp post bases and miscellaneous finishing and trimming. The total amount of concrete laid was 257 cubic yards.

OPERATION OF THE AUXILIARY CONCRETE CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours)	8.00
Average number of hours per day worked laying concrete, actual working time	1.49
Average number of mixers per day	.20
Average hourly output per mixer, actual working time (cubic yards)	6.04
Concrete laid (cubic yards)	257.00

Of the above, 73 cubic yards were mixed by hand.

Miraflores Locks.—Concrete work in the locks consisted of the installation of bracket supports in the north wing walls, reinforced concrete floor and stairway at the junction of the upper and lower middle walls, west emergency dam quadrant, and other miscellaneous work.

The concrete work for the spillway was continued, the concrete being transported on transfer cars from the berm cranes to derricks, and also supplied by three small mixers at the site.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	8.00	8.00
Average number of hours per day worked laying concrete, actual working time	1.52	7.00
Average number of mixers per day	2.00	3.08
Average hourly output per mixer, actual working time (cubic yards)	36.94	24.45
Average number of concrete laid per hour per berm or chamber crane, actual working time (cubic yards)	21.76	
Total concrete laid (cubic yards)	827.00	29,823.00

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.	
Length of working day (hours)	30.12.00
Average number of hours per day, actual working time	7.85
Average number of cubic yards crushed per hour of working time	238.80
Average number of cubic yards crushed per working day	315.00
Total output for the month (cubic yards)	54,416.03
Plant lay from 1st to 5th. Crushers shut down for repairs from 6th to 9th.	

DISTRICT NO. 5—GOLD HILL SLUICING PLANT.

The installation of the pumping station, discharge mains, flumes, oil supply tanks, pipelines, etc., was completed and operation started on June 17. After a few days' preliminary work getting the monitors into position, washing out flumes, etc., the sluicing work was started and operated seven days,

excavating 57,000 cubic yards at a total cost of approximately eight cents per cubic yard.

Sixth Division—Office of the Chief Engineer.

PACIFIC END.

Seven dredges were engaged in channel and inner harbor excavation at Balboa, removing 424,619 cubic yards of earth, and 179,461 cubic yards of rock from the Canal prism, and 31,179 cubic yards of earth from the inner harbor and turning basin, a total of 635,259 cubic yards. At the close of the month, there remained to be removed from the Canal prism 3,286,144 cubic yards. The French ladder dredge *Gopher*, engaged in sand excavation at Punta Chamé during the entire month, removed 32,700 cubic yards.

ATLANTIC END.

Nine dredges were in operation during the month, removing 722,785 cubic yards of earth and 91,807 cubic yards of rock from the Canal prism. On June 30, there remained to be excavated 1,936,791 cubic yards. The drill barge *Terrier* completed mining on the site for the bridge across the French canal. On June 30, dredge No. 1 was moved to the bridge site, prepared to do the necessary excavating. At the close of the month, 40 feet of water could be carried from zero to zero plus 2,100 feet, 35 feet to mile post 6 plus 2,300 feet, 30 feet to mile post 6 plus 2,320 feet, 20 feet to mile post 6 plus 2,350 feet, and 10 feet to mile post 6 plus 2,800 feet.

Atlantic Division.

GATUN LOCKS.

Excavation.—Out of a total of 31,115 cubic yards of rock and earth excavated during the month, 27,749 cubic yards were borrow pit excavation, 228 cubic yards were dug by hand in the locks, 1,246 cubic yards were removed by scraper and crane in grading the backfill, 280 cubic yards were excavated by crane in bringing the backfill to grade, and 1,612 cubic yards were taken out by steamshovel for transformer substation.

Backfill.—During the month, there were 31,225 cubic yards of backfilling placed. On June 30, the backfill was 95.45 per cent completed.

Receiving and issuing material.—The issues of rock amounted to 9,683 cubic yards. There were 3,450 cubic yards of sand issued. Cement receipts totaled 6,474 barrels, and the issues amounted to 10,870½ barrels.

Concrete work.—A total of 5,064 cubic yards of concrete was laid, distributed, as follows: Upper locks, 200 cubic yards; middle locks, four cubic yards; lower locks and north approach walls, 4,860 cubic yards.

On June 30, the locks concrete work was 99.9 per cent completed.

OPERATION OF CONCRETE CONSTRUCTION PLANT.	
Length of working day (hours).....	8.00
Average number of hours per day worked, per strand of cableway, laying concrete, actual working time.....	.85
Average number of mixers per day.....	2.00
Average hourly output per mixer, actual working time (cu. yds.).....	51.86
Average amount of concrete laid per hour, per strand of cableway, actual working time (cubic yards).....	31.40
Concrete laid (cu. yds.) cableways.....	5,300
Concrete laid (cu. yds.) portable mixers.....	330
Concrete laid (cu. yds.) hand mixed.....	229
Total amount of concrete laid (cu. yds.)....	5,878.00

GATUN DAM.

Construction during the month increased the total fill, as determined by car measurement 109,266 cubic yards, making the total amount

in place 21,786, 820 cubic yards. On July 1, the dam was 99 per cent completed.

Dry fill.—Additions to the dry fill amounted to 99,457 cubic yards, which was placed on the north and south toes of the dam, east and west of the spillway, making the total dry fill in place 11,578,268 cubic yards.

GATUN SPILLWAY.

Concrete.—Concrete laid during the month amounted to 565 cubic yards, making the total in place 224,134 cubic yards. Concrete work for the spillway was 97.9 per cent completed.

Hydroelectric plant.—In preparing foundations, 160 cubic yards of rock were removed by hand and crane, making a total excavation of 98,750 cubic yards. During the month, 1,456 cubic yards of concrete were placed, making a total of 5,068 cubic yards.

WEST BREAKWATER—COLON.

Out of a total of 19,681 cubic yards of Porto Bello rock placed on the breakwater, 8,663 cubic yards were unloaded by cranes, and 11,018 cubic yards by derrick barges. The total amount placed upon the breakwater to July 1 was 248,895 cubic yards.

MUNICIPAL ENGINEERING.

The floors and walls of the six filters of the new Colon waterworks were completed, as were also the foundation and floors of the mixing chambers, and all foundations and footings in the aeration basin.

Central Division.

The total amount of material excavated during the month was 821,026 cubic yards, of which 258,740 yards were classified as earth, and 562,286 cubic yards as rock. The entire amount was removed by steamshovels, 805,109 cubic yards being classified as primary excavation, 2,900 cubic yards as from ditch for draining Old Culebra dump, and 13,017 cubic yards as plant excavation. Of the total primary excavation, 143,958 cubic yards were taken from within the lines of the Canal prism, and 661,151 cubic yards from without the Canal prism, the latter amount being excavated from slides and from high levels as a preventive measure against slides.

The daily average number of steamshovels at work was 38.28, and the number of shovel days was 957, as compared with 40.54 shovels at work, and 1,054 shovel days in May. For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table is presented:

Period	Excavated by shovels.	Classification of material.		Av. No. of shovels at work	W kg days.	Av. yds. per shovel day.
		Rock.	Earth.			
1912:						
June	Cu. Yds.	Cu. Yds.	Cu. Yds.	C. P.		
1913:						
June	821,026	258,740	562,286	38.28	25	858.00

Rainfall at Empire: 1912, 8.60 ins.; 1913, 11.48 ins.

The estimated amount of dry material removed and to be removed, according to the revision of February 1, 1913, is 111,751,472 cubic yards. Up to July 1, 1913, 107,139,181 cubic yards had been removed, leaving 4,612,291 cubic yards to be removed, in order to complete all dry excavation in this division. At the close of the month, 95.87 per cent of all dry excavation was completed. On June

30, the status of the work in the two sections which compose this division was, as follows:

CULEBRA CUT.		Cubic Yards
Dry excavation accomplished.....		94,751,526
Dry excavation to be accomplished.....		4,612,291
CHAGRÉS SECTION.		
Dry excavation completed.....		12,384,655
Wet excavation to be accomplished.....		300,000

Deliveries of 9,097 cubic yards of spoil were made to Quebrancha siding, to be used for reinforcing the Quebrancha and Brazos embankments of the relocated line of the Panama railroad.

Material dumped from Naos Island trestle during the month totaled 30,538 cubic yards.

The daily average number of laborers at work was 6,483, while the average number of gold men working was 599.

Quartermaster's Department.

LABOR.

The force report of June 25 showed 38,301 men actually working for the Commission and the Panama Railroad Company. The actual working forces of the several contractors totaled 3,961 men. The unskilled labor supply was adequate.

BUILDINGS.

The removal of buildings at Gorgona has progressed rapidly. Nine buildings removed from this settlement were reerected during the month, two at Balboa, and seven at Corozal. At Pedro Miguel, five buildings were removed to new sites. The motor car house at Culebra was converted into a dispensary. One cottage at Cristobal was moved to a new location. Twelve buildings were demolished.

QUARTERS.

At the close of the month, there were 21 applications on the No. 1 list for married quarters, and 751 names on the No. 2 list. Only 50 families remained in quarters at Gorgona, and it is expected that 35 of these will be transferred to other districts during the present month. Bachelor quarters at Balboa were congested.

MATERIAL AND SUPPLIES.

The value of material received was \$1,173,391.38. This material came forward in 38 steamers, the total weight of cargo, exclusive of lumber, piling, and ties, being 20,000 tons.

Subsistence Department.

The Hotel Tivoli was operated at a net loss of \$820.22. The operation of the line hotels, European laborers' messes, colored laborers' kitchens, restaurants, tugs, and dredges resulted in a net loss of \$33.58. The total net loss on subsistence operations during the month was \$853.80.

Department of Civil Administration.

COURTS.

Courts.—During the month, one civil case was disposed of in the Supreme Court, 70 civil and 60 criminal cases in the Circuit Courts, and 61 civil and 584 criminal cases in the District Courts.

POSTS, CUSTOMS, AND REVENUES.

Money order sales amounted to \$408,885.06 and the fees to \$1,912.33. Receipts from stamp and card sales and newspaper postage aggregated \$8,609.87. The total collection of revenues was \$25,934.45, and the collections on account of court fines, costs, and fees, \$2,888.30. A total of \$151,460 was deposited in postal savings accounts, and a total

of \$151,240 was withdrawn. At the port of Ancon, 21 vessels entered and 22 cleared; at the port of Cristobal, 16 entered and a like number cleared.

POLICE AND PRISONS.

The total number of persons arrested was 584, of whom 510 were men and 74 women. Sixteen convicts were committed to the penitentiary, and 11 were discharged, leaving 133 convicts in confinement at the close of the month. The cost of guarding and subsisting these prisoners was \$2,310.48, and the value of the work performed by them on the roads of the Canal Zone was \$2,221.60.

FIRE PROTECTION.

Six fires were reported in the Canal Zone. The total damage occasioned by these fires was \$20.

PUBLIC WORKS.

In the city of Panama, the daily average consumption of water was 1,734,733 gallons, and in Colon, 1,082,076 gallons.

SCHOOLS.

The net enrollment in the white schools was 1,369; the average number of pupils belonging was 1,001.2, and the average daily attendance 940.6. In the colored schools the net enrollment was 1,580; the average number belonging was 877.4, and the average daily attendance, 706.6. At the close of the month, 47 teachers were employed in the white schools, and 32 teachers in the colored schools, the total number being the same as at the close of the preceding month. Seven pupils graduated from the high school, having completed the 4-year course. On June 30, the schools closed for the summer vacation.

Department of Sanitation.

The total number of deaths from all causes among employes was 28, divided, as follows: From disease, 16, and from violence, 12, giving an annual average per thousand of 3.27 and 2.46, respectively. The annual death rate per thousand among employes for the month of June, 1912, was 6.84.

The annual average death rate per thousand in the Canal Zone, and in the cities of Panama and Colon, including both employes and nonemployes, was 22.11. This rate based upon a population in the Canal Zone of 62,810, according to the census of February, 1912, and populations in Panama and Colon, respectively, of 47,172, and 20,232, as estimated by the Department of Sanitation. The annual average death rate per thousand among the same classes of population for the month of June, 1912, was 22.88.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was: Whites, 4.85; blacks, 2.85, giving a general average for disease of 3.27. For the same month during 1911, the annual average rate per thousand from disease among whites was 11.19; blacks, 8.82, giving a general average of 9.4; and for the same month during 1912, whites, 5.92; blacks, 3.25, giving a general average of 3.91.

Among employes, deaths from the principal diseases were: Dysentery, one; lobar pneumonia, one; malaria fever E. A., one; organic disease of the heart, two; tuberculosis, four, leaving seven deaths from all other diseases, and 12 deaths from external violence. No case of yellow fever, smallpox, or plague

originated on, or was brought to the Isthmus during the month.

Respectfully,
GEO. W. GOETHALS,
Chairman and Chief Engineer.

Markers for Canal Zone Roads.

The Panama-Gorgona, Empire-Chorrera, and Las Sabanas roads have been provided with markers containing information as to distances. They consist of oblong cast iron plates, manufactured at Gorgona shops, having raised letters and figures, painted white on a black background, with iron rails for the posts. In addition, round plates, similar to the markers in all respects, except shape, are placed where the roads extend to, or cross the Canal Zone boundaries. Thirty-four plates for markers, and four for boundary designations, have been made for the three roads. The distances from Panama on the Canal Zone highway and Las Sabanas road begin at the Panama passenger station; those on the Empire-Chorrera road from the railroad station at Empire. The legends on the south side of the markers on the Panama-Gorgona road give the distances to each town in miles and fractional parts of a mile; those on the north side, from Gorgona toward Panama in even miles, 22 to 1, inclusive.

On Las Sabanas road, the distances from Panama to Juan Diaz are given in fractional miles and kilometers, and from the Canal Zone line, near the police station, to Panama in even kilometers and fractional miles, as follows:

TO JUAN DIAZ.		TO PANAMA.	
Miles.	Kilometers.	Miles.	Kilometers.
8.22	13.24	3.94	6.34*
7.60	12.24	3.72	6.00
7.60	12.21*	3.10	5.00
6.98	11.24	2.48	4.00
6.36	10.24	1.86	3.00
5.74	9.24	1.25	2.02†
5.12	8.24	1.24	2.00
4.91	7.90†	.62	1.00

*Boundary line of the Republic of Panama. †Boundary line of the Canal Zone.

On the Empire-Chorrera road, there are six markers and one boundary post. The post is 6.32 miles from Empire, and the first marker is stationed at the sixth mile, continuing in even miles from there to Empire. From Empire toward the Canal Zone line, the east sides of the markers show fractional miles.

Miscellaneous Notes.

Permission has been granted to sell grass from the Corozal farm to coachmen in Panama, and others, at the rate of \$1 per load. The fixing of a rate for the pasturing of animals on the farm on a monthly basis is also being considered.

The use of a plot of ground back of the row of houses opposite the clubhouse at Cristobal, as a playground for the children of the Cristobal white school, has been granted.

Mr. H. S. Farish has been appointed chairman of a committee to investigate and report on the condition of the furniture in the Canal offices on the Isthmus.

The Quartermaster's Department will discontinue shortly the purchase of merchant bar iron, and meet the Isthmian requirements with purchases of soft steel. From time to time, quantities of the bar iron received from the United States have been of poor quality, and the soft steel is more satisfactory.

PENITENTIARY DEMOLISHED.

Necessitated by Slide Encroachment.—Convicts at Gamboa Stockade.

The concrete penitentiary building at Culebra, which was abandoned in October, 1911, because of slides on the west bank of the Cut, menacing its stability, has been demolished. The slide area has never broken back to the site of the building, but the possibility of its doing so has made the building useless, and it was decided to remove it to obviate injury to the steel roof trusses and cell construction.

When the erection of the building was begun, in 1906, it was intended for a laundry, but on account of the imperative need of increased accommodations for long-term prisoners, numbering about 75, an order was issued on May 1, 1907, to convert it to a prison. It was completed as such on May 7, 1908. The danger from slides became imminent in 1911, and, in October of that year, the occupants were moved to a stockade erected near the Mandingo River, on the line of the Empire-Chorrera road. Convict labor had been employed on this highway since March 20, 1911, building it outward from Empire. During the following February, the Culebra police station and jail, adjacent to the penitentiary, was dismantled and reerected at West Culebra. The Mandingo stockade was closed on January 13, 1913, and the convicts were transferred to the stockade at Gamboa to work on the Gamboa-Empire highway.

The erection of a permanent penitentiary for the Canal Zone has been under consideration since the organization of the Canal Zone Government. A site was selected for it near Bohio, but was abandoned after the lock-type canal was decided on; Bohio lies within the Gatun Lake area and is now under water. In 1907, a site across the Panama railroad from Camp Diablo was recommended, but was not decided on because of uncertainty as to the layout of the Pacific locks and dams. Their present arrangement was determined upon on December 19, 1907, but when the matter of a permanent penitentiary was next taken up the idea of a farm in connection with it found favorable consideration and a site was selected, south of Pedro Miguel and just east of the relocated Panama railroad. Plans were made for moving the penitentiary from Culebra to this site, but the matter has since been held in abeyance, pending the development of a permanent organization for the operation and maintenance of the Canal. Following the demolition of the building at Culebra, the steel work for the cells has been stored with the Quartermaster's Department, subject to future requisition.

All of the long-term prisoners, or convicts, are at present confined at Gamboa and actively employed in the road construction. On June 29, 1913, they numbered 133, nine of whom are white Americans, 11 white Europeans, and 113 blacks. Two, a Panamanian, and a United States negro, are life prisoners. There are no women convicts at present.

Pending the adoption of wharfage rules and charges under the permanent organization for the operation of the Canal, the wharves and piers owned or operated by the Isthmian Canal Commission will be subject to the rates, rules, and regulations which are in effect for the wharves of the Panama Railroad Company.

CULEBRA CUT RAILROAD.

Transportation System for Disposal of Material Excavated by Central Division.

Digging Culebra Cut involves dry excavation amounting to at least a hundred million cubic yards. From the beginning, it was recognized that the working efficiency of the steamshovels depends primarily upon the means of disposition of the spoil; to "make the dirt fly" meant to move it out of the channel. The shovel engineers' detailed reports of delays classify them as mining, cleaning track, repairs, switching, derailments, moving up, cutting out, waiting for steam, and waiting for cars. In an aggregate of reports covering any considerable length of time on a large job, "waiting for cars" is chargeable with the maximum time loss, unless transportation is markedly expeditious. The rumble of the dirt trains sound the keynote of excavation progress.

In the 9-mile length of Culebra Cut, the number of shovels at work has averaged about 37, and, though this number has been diminished by perhaps half a dozen as the area of excavation has drawn toward the summit of the continental divide, the concentration of work within a mile and a half of channel has intensified the problems of transportation. In the section just north of Gold Hill are seven parallel tracks, on the levels of excavation, in constant use. Slides frequently put all but one or two out of service, so that the removal of tracks and the laying of new ones averages about a mile a day. The disposal of spoil, except from the half-dozen shovels engaged in terracing at the tops of slides, is made at dumps from one to 10 miles beyond the ends of the Cut, or from three to 12 miles from the shovels. The work employs 119 locomotives, and a total of about 2,000 dirt cars. Under these conditions, the transportation involves unusually acute "railroading."

The operation of the trains is controlled by the superintendent of transportation and the chief dispatcher of the Central Division, from their joint office in the division office building at Empire. Their work for the day begins the evening before, when, from reports by telephone from the yardmasters in the Culebra and Empire construction districts, as to the position of the trains at the close of work, they order bulletins posted at the roundhouses at Las Cascadas and Pedro Miguel, covering the distribution of crews and locomotives for the next morning. As the locomotives come in from the day's work, the crews on the extra list learn from the assignment board at which roundhouse to report in the morning, which they do by the early labor train.

From these same orders the hostling crews at the roundhouses distribute the locomotives on numbered tracks which indicate their destinations. A crew boarding an engine at Pedro Miguel roundhouse knows from the number of the track upon which it is placed whether it is to go direct to the Cut by way of the Paraiso incline, or to make its way to the dumps north of the Miraflores tunnel, or to Balboa; at Las Cascadas, the arrangement shows which locomotives are to go into the Cut from the west side, down the incline at Bridge 50½; which are to cross the dike from Matachin and go down the east side, and which are to proceed across the Chagres River bridge to the dumps along the relocation of the Panama railroad.

As the locomotives entering the Cut pass the

tower of the district yardmaster, he directs their passage to the trains of cars by order cards handed to the conductors. The first engine goes to the farthest train, and the others, in order, so that there will be no congestion due to backing in or crossing over. Throughout the day the district yardmasters direct the passage of the loaded trains to the various dumps, by telephone reports from dump yardmasters on their readiness to receive spoil; and on the return of the empty trains, distribute them to the shovels. From half a dozen small towers distributed along the line of excavation, tower-tenders keep the yardmasters informed of the progress of loading in their vicinity. The yardmasters order the right-of-way for loaded trains, and report their passage out of the district to the dispatcher, who handles the trains to the dumps. On their way, most of them pass on to the main line of the Panama railroad. The dispatcher's office has direct telegraphic connection with the lines of the railroad, and is informed as each train enters and leaves a block. The train crew takes its orders from the semaphores.

At each set of dumps is a yardmaster who reports to the dispatcher the arrival and departure of trains, and his readiness for spoil. He also orders the distribution of the loaded trains to the several dumping tracks, as well as the movements of the Lidgerwood unloaders, and the spreaders and trackshifters.

The transportation requirements of steamshovels engaged in Central Division work outside the Cut, such as terracing, diversions, and special work, are attended to directly by the dispatcher, on report from the foreman in charge. The dispatcher also handles directly the movements of labor trains, and the wrecking trains, which operate in all divisions and on the Panama railroad, and a picked crew in his charge hauls all the explosives used in the Canal and railroad construction.

The construction tracks of the division totaled 132.7 miles in length on July 1, 1913. Its track length and equipment in service exceed those of a number of minor railroads in the United States*. Its force for the maintenance of way numbers 1,923 men. The tonnage of traffic per mile is greater than that of the Panama railroad, reputed to be in excess of that of any other commercial railroad in the world. The latest annual report of the Panama railroad showed that the road hauled in the fiscal year ending June 30, 1912, 1,871,076 tons of freight, or 36,846.7 tons (of 2,000 pounds) per mile of main line. This is equivalent to 3,070.56 tons per mile a month. For the first five months of 1913, the Central Division excavation amounted to 5,415,480 cubic yards, an average of 1,083,096 cubic yards per month. Assuming that the run-of-Cut spoil weighs 1.3 tons per cubic yard, the weight of such material hauled by Central Division dirt trains per month in 1913 has been 1,408,024.8 tons, or 10,610.5 tons per mile; including weight of equipment, it has been 3,528,088.8 tons, or 26,587 tons per mile of operated track.

The force engaged in transportation for the Central Division, exclusive of the force for the maintenance of track, comprises 183 engineers, 173 conductors, 14 yardmasters, 10 towermen, two telegraph operators, and two yard clerks,

*Of the 1,270 railway systems on the North American continent, and in Cuba, listed in the June, 1913, number of the *Official Railway Guide*, issued by the National Railway Publication Company, 998, or 78 per cent of the total, have less than 130 miles of track.

a total of 384 "gold" men. Their average monthly pay is above \$210; it is believed that this is the greatest number of men engaged at such pay under one department of work in the world. All of the locomotive engineers and conductors in the service of the Panama railroad, with the exception of eight "old timers," whose service with the road antedates the advent of the Isthmian Canal Commission, are graduates of the Canal service.

PERSONAL.

Gen. Rafael Reyes, ex-president of Colombia, accompanied by his son, arrived on the Isthmus on Tuesday, July 22, on the steamer *Guatemala*, from Valparaiso, Chile. During the past year and a half he has been traveling extensively in Spain, the United States, Cuba, and most of the South American countries in the furtherance of a project for erecting a statue to Vasco Núñez de Balboa at the Pacific entrance to the Canal. He will spend several days on the Isthmus visiting the Canal work.

Congressman Robert Crosser of Ohio returned to New York on the *Cristobal*, on Monday, July 21, after a week spent in viewing the Canal work. Congressmen S. Hubert Dent, Jr., and family, and George J. Kindel also returned to the United States on the same steamer.

The resignation of Mr. Arthur L. Robinson as Superintendent of the Mechanical Division became effective July 20, and Mr. and Mrs. Robinson and Miss Cecile Robinson sailed for the United States on Monday, July 21, on the *Cristobal*. Prior to coming to the Isthmus, where he arrived on June 4, 1905, Mr. Robinson was head of the electrical department of the Southern Railway. He served as electrical engineer in connection with the electrical and mechanical work of the Commission until October, 1909, when, upon the resignation of Mr. George D. Brooke as Superintendent of Motive Power and Machinery, he was appointed head of the reorganized Mechanical Division. In this capacity he made improvements in the management of the shops, one of his changes resulting in an annual saving of \$105,000 in overhead expense. On his return to the United States he will visit friends in Harrisonburg, Virginia, before proceeding to his home in Louisville, Kentucky.

Examination by Board of Local Inspectors.

The Board of Local Inspectors will conduct examinations at the Administration Building, Ancon, on Wednesday, July 30, beginning promptly at 2 p. m., for persons desiring to secure the following classes of licenses: Pilots, masters, mates, marine engineers, chauffeurs, and navigators of motor boats. All applicants for licenses must procure from the Executive Office, Ancon, forms of application and information respecting the filling out of same, not later than the day previous to the examination. Applicants for chauffeurs' licenses must also bring automobiles with them.

Missing Man.

Any one having information regarding the whereabouts of Mr. Ober Lucas, who was in the employ of the McClintic-Marshall Construction Company at Miraflores, up to April 7, 1913, will please communicate with the office of the Chairman and Chief Engineer, Culebra.

AUTOMOBILE TARIFF.

Schedule of Rates for Transporting Passengers Over Canal Zone Streets and Roads.

ANCON, C. Z., July 10, 1913.

Under the authority vested in me by the Ordinance enacted by the Isthmian Canal Commission on August 25, 1910, and approved by the Secretary of War on December 3, 1910, I hereby prescribe the following rates for the transportation of passengers by automobile or other motor vehicle of similar construction over the streets and roads of the Canal Zone.

Any person who shall charge any amount in excess of the rates herein prescribed, or any person who shall fail or refuse to pay the duly prescribed rate for transportation shall be punished by a fine not to exceed twenty five dollars (\$25). (Sections 4 and 5 of Ordinance No. 21.)

A rate different from that herein prescribed may, however, be made and charged, if the parties to the transaction agree thereon. In case of any dispute, the duly prescribed rate shall prevail.

Section 6 of Ordinance No. 19 requires that all motor vehicles shall, when being operated on any of the Canal Zone streets or roads, between the hours of 6 p. m. and 5 a. m., carry and prominently display lights, as follows: Automobiles, or motor vehicles of similar construction, two bright front or headlights, one on either side, and one red light at the rear.

This tariff of rates is made reciprocal between points in the Canal Zone and the city of Panama by a Resolution adopted by the Municipal Council of Panama on April 28, 1913, and becomes effective in the Canal Zone following its publication in two consecutive issues of THE CANAL RECORD.

GEO. W. GOETHALS, Chairman,

In charge of Department of Civil Administration.

Automobile Tariff Between Points in the Canal Zone and the City of Panama.

RATES BY THE HOUR.

(All rates in United States Currency.)

Capacity of car.*	For first hour.	For each hour thereafter.
5 passengers.....	\$5.00	\$4.00
6 passengers.....	6.00	5.00
7 passengers.....	7.00	6.00

*Five, six, and seven-passenger cars are those having a normal seating capacity for five, six, and seven passengers, respectively, including the chauffeur.

For cars having a seating capacity less than that above indicated the rates are not to exceed \$1 U. S. currency per hour for each person for which the car has a normal seating capacity, including the chauffeur.

For any car having a normal seating capacity of more than seven passengers, the charge shall be computed for the first hour at the rate of \$1, U. S. currency, for each person for which such car has a normal seating capacity, including the chauffeur, and for each hour thereafter \$1 less than the first hour rate for the car.

COMPUTATION OF TIME.

Time lost in breakdowns, the making of repairs and other stops for which passengers are not responsible, shall not be charged against passengers.

Where cars are ordered from garages in the cities of Panama and Ancon for service to begin in said cities, the time upon which the hourly rate shall be computed shall begin when the car leaves the point where it is boarded by the passenger or passengers, and the time shall be deemed to end when the car returns to such point of original departure or any other point designated by the passenger or passengers, except where cars are ordered to be at a designated place at a certain time, in which case the time shall start from such specified hour.

Where cars are ordered from garages in the cities of Panama and Ancon for use outside of said cities, time for which charge may be made at the hourly rate shall begin when the car leaves the garage.

For fractional parts of an hour the proportionate part of the hourly rate will be charged.

Whenever any car is employed at the hourly rate and the passengers leave the car at some point or points other than the place of departure, the time which should be consumed by the car in returning direct to the place of departure, or to such other point as may be agreed on, shall be included in the time to be charged for.

RATES BETWEEN LOCAL POINTS.

Where automobiles engage in the business of carrying one or more passengers between the points shown in the following table, and such automobiles are not hired upon an hourly basis, the charges for transportation furnished between such points shall not be in excess of those hereinafter prescribed.

PANAMA—ANCON—BALBOA.

Between any point in	And	United States currency
Ancon or Panama	Any other point in Ancon (outside of hospital reservation) or Panama. One way—For each person....	\$0.50
Ancon or Panama	Balboa Docks and return: 5-passenger car.....	3.50
	7-passenger car.....	5.00
	No reduction for one way.	
Ancon or Panama	Old Panama and return: 5-passenger car.....	5.00
	7-passenger car.....	7.00

NOTE—The rate to Old Panama and return is that above shown, provided the time consumed does not exceed one (1) hour, in which case the charge shall be computed upon the hourly basis.

Canal Zone Automobile Tariff.

LOCAL POINT RATES FOR CULEBRA, EMPIRE, AND LAS CASCADAS.

Between	And any point in	U. S. currency. One way.
Culebra (Administration building, and environs).	Empire.....	For each passenger. .75
Culebra, (Railroad station.)	Empire.....	.50
Empire.....	Las Cascadas.....	.50

NOTE.—The rates by the hour, as well as the rules governing the computation of time, shall be the same as those prescribed in the Automobile Tariff between points in the Canal Zone and the city of Panama.

Approved:

GEO. W. GOETHALS, Chairman,

In charge of Department of Civil Administration.

ANCON, C. Z., July 10, 1913.

Under the authority vested in me by the Ordinance enacted by the Isthmian Canal Commission on August 25, 1910, and approved by the Secretary of War on December 3, 1910, I hereby prescribe the following rates for the transportation of passengers by automobile or other motor vehicle of similar construction over the streets and roads of the Canal Zone.

Any person who shall charge any amount in excess of the rates herein prescribed, or any person who shall fail or refuse to pay the duly prescribed rate for transportation received, is guilty of a misdemeanor, and upon conviction shall be punished by a fine not to exceed twenty-five dollars (\$25). (Sections 4 and 5 of Ordinance No. 21.)

A rate different from that herein prescribed may, however, be made and charged, if the parties to the transaction agree thereon. In case of any dispute, the duly prescribed rate shall prevail.

Section 6 of Ordinance No. 19 requires that all motor vehicles shall, when being operated on any of the Canal Zone streets or roads, between the hours of 6 p. m. and 5 a. m., carry and prominently display lights, as follows: Automobiles, or motor vehicles of similar construction, two bright front or headlights, one on either side and one red light at the rear.

This tariff of rates is made reciprocal between points in the Canal Zone and the city of Colon by Ordinance No. 25, enacted by the Municipal Council of Colon on June 27, 1913, and becomes effective in the Canal Zone after publication in two consecutive issues of THE CANAL RECORD.

GEO. W. GOETHALS, Chairman,

In charge of Department of Civil Administration.

Automobile Tariff Between Points in the Canal Zone and the City of Colon.

RATES BY THE HOUR.

(All rates in United States Currency.)

Capacity of car.*	For first hour.	For each hour thereafter.
5 passengers.....	\$5.00	\$4.00
6 passengers.....	6.00	5.00
7 passengers.....	7.00	6.00

*Five, six, and seven-passenger cars are those having a normal seating capacity for five, six, and seven passengers, respectively, including the chauffeur.

For cars having a seating capacity less than that above indicated the rates are not to exceed \$1 U. S. Currency, per hour for each person for which the car has a normal seating capacity, including the chauffeur.

For any car having a normal seating capacity of more than seven passengers, the charge shall be computed

for the first hour at the rate of \$1 U. S. Currency, for each person for which such car has a normal seating capacity, including the chauffeur, and for each hour thereafter \$1 U. S. Currency, less than the first hour rate for the car.

COMPUTATION OF TIME.

Time lost in breakdowns, the making of repairs and other stops for which passengers are not responsible, shall not be charged against passengers.

Where cars are ordered from garages in the cities of Colon and Cristobal for service to begin in said cities, the time upon which the hourly rate shall be computed shall begin when the car leaves the point where it is boarded by passenger or passengers, and the time shall be deemed to end when the car returns to such point of original departure or any other point designated by the passenger or passengers, except where cars are ordered to be at a designated place at a certain time, in which case the time shall start from such specified hour.

Where cars are ordered from garages in the cities of Colon and Cristobal for use outside of said cities, the time for which charge may be made at the hourly rate shall begin when the car leaves the garage.

For fractional parts of an hour the proportionate part of the hourly rate will be charged.

Whenever any car is employed at the hourly rate and the passengers leave the car at some point or points other than the place of departure, the time which should be consumed by the car in returning direct to the place of departure, or to such other point as may be agreed upon, shall be included in the time to be charged for.

RATES BETWEEN LOCAL POINTS.

Where automobiles engage in the business of carrying one or more passengers between the points shown in the following tables, and such automobiles are not hired upon an hourly basis, the charges for transportation furnished between such points shall not be in excess of those hereinafter prescribed.

CRISTOBAL—COLON—GATUN.

Between any point in	And	United States currency.
Cristobal or Colon.	Any other point in Colon or Cristobal. One way—For each passenger.....	\$0.50
Cristobal or Colon	Gatun and return* 5-passenger car.....	\$6.00
	7-passenger car.....	8.00
	No reduction for one way.	

*With privilege of 5-minute stop for benefit of passengers.

Misdirected Letters.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured by request of addressees:

Benz, John	Holmes, Arthur B.
Bouche, Miss Martha	Keitchen, F. L.
Broder, Edwin	Lewis, Mrs. Al
Brown, Solomon A.	McElroy, A. D.
Cartas, Daniel	Messado, Alfred
Dunaent, Quartermaster	Niemann, M.
Sergeant Roy (2d class)	Perry, William Bankhead
Eroe, Ralph D.	Quintero, Policarpo
Findlay, D. K.	Saule, Horace
Floyd, Frank	Tarte, Domingo and Co.
Freeburg, S.	Vaughn, Earl
Green, Alfred	Wilson, W.

Married.

DILLON-WHITING—At the Union Church, Cristobal, on July 17, Miss Wenonah Adelaide Whiting of Rhinelander, Wis., to Mr. Vesper Claude Dillon of Indianoma, Okla., the Rev. Carl H. Elliott officiating. Canal Zone residence, Gatun.

LOST—On July 15, between Panama railroad office building and house No. 61, Colon, W. H. S. '04 class pin. Reward, if returned to T. R. Woolfolk, care laundry, Cristobal.

LOST—Left in coach in Colon or Cristobal, one black hand bag containing gold coins and jewels. Please return to House 30, Cristobal, for reward.

LOST—On Sunday, July 20, between Culebra and Empire, garnet pendant with gold chain, valued as a keepsake. Liberal reward for its return to C. W. Hill, Examiner's Office, Empire.

FOUND—Small purse containing an amount of money, brass check, and laundry check. Owner can recover same by calling at House 86-C, Pedro Miguel.

OFFICIAL CIRCULARS.

Assignments in Division of Municipal Engineering.

ISTHEMIAN CANAL COMMISSION.
DIVISION OF MUNICIPAL ENGINEERING.
OFFICE OF RESIDENT ENGINEER.
GATUN, C. Z., July 21, 1913.

To All Concerned—Effective at once, certain work in the Division of Municipal Engineering will be divided, as follows:

All work in the territory from Gatun, north, including the city of Colon, but exclusive of the construction of the new Colon water works and the operation of the filtration plants, will constitute the Northern District. Mr. E. H. Chandler will be in charge of this district, as superintendent, with office at Cristobal.

All work in the territory from Gorgona, south, including the city of Panama, but exclusive of the construction of the new water works and the operation of the filtration plants, will constitute the Southern District. Mr. D. E. Wright will be in charge of this district, as superintendent, with office at Ancon.

Mr. W. J. Spalding, assistant engineer, will be in charge of the construction of the new water works for the southern end of the Canal, with office at Corozal.

Mr. J. T. B. Bowles, physiologist, will be in charge of the operation of all filtration plants and the examination and analyses of Canal Zone water supplies. His office will be at the Gatun laboratory.

GEO. M. WELLS,
Resident Engineer.

Approved:
GEO. W. GOETHALS,
Chairman and Chief Engineer.

Parlor Car Service, P. R. R.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT.
COLON, R. P., July 18, 1913.

CIRCULAR No. 138:

All Concerned—Effective Monday, July 21, 1913, parlor car service will be operated on trains Nos. 2, 5, 6, and 7, week days, and trains Nos. 20, 23, 24, and 27, Sundays and holidays only, for a period of one month.

JOHN D. PATTERSON,
General Superintendent.

Uniform Water Rates.

COLON, R. P., July 15, 1913.

CIRCULAR No. 131:

All Concerned—Effective August 1, 1913, water rates on the Atlantic and Pacific sides will be made uniform and, as follows: \$1 per thousand gallons with a minimum charge of \$2. For delivery from dock for water delivered by lighters, an additional charge of \$15 per hour, to cover tug service for handling lighter to be made, with a minimum charge of \$15 for tug service.

JOHN D. PATTERSON,
General Superintendent.

Coal Order Correspondence.

PANAMA RAILROAD COMPANY,
COLON, R. P., July 19, 1913.

CIRCULAR No. 137:

All Concerned—All letters and telegrams, pertaining to coal orders, heretofore addressed to Mr. A. O. Herman, general foreman, car department, should be addressed in the future to Mr. R. W. Bersin, receiving and forwarding agent, Colon.

JOHN D. PATTERSON,
General Superintendent.

Cucaracha Call Station Abolished.

DEPARTMENT OF CIVIL ADMINISTRATION.
DIVISION OF POLICE AND PRISONS,
ANCON, C. Z., July 18, 1913.

GENERAL ORDER No. 1791:

Effective today, Cucaracha call station is abolished, and Policeman J. E. Forde ordered transferred from Cucaracha to Paraiso substation.

The property of the Department of Civil Administration, and the Quartermaster's Department, now at Cucaracha call station, will be turned in to the sub-police station at Paraiso.

C. W. BARBER,
Chief of Division.

Gorgona Police Station Discontinued.

DEPARTMENT OF CIVIL ADMINISTRATION.
DIVISION OF POLICE AND PRISONS,
ANCON, C. Z., July 17, 1913.

GENERAL ORDER, 1790:

Effective today, the Gorgona police station is discontinued, and the following officers on duty at that station are transferred to Bas Obispo for station: Sergt. Charles F. Johnson, Corp. William H. Walston, first-class policeman M. L. Brooke, first-class policeman Patrick Farrell, first-class policeman William Heller.

first-class policeman Angus McCormack, first-class policeman Harry S. Rowe, first-class policeman Frank C. Ruggles, and first-class policeman L. Seiber.

First-class policeman Walter Grimm is ordered transferred from Gorgona substation to Ancon central station.

First-class policeman Archie L. Reeve is ordered transferred from Matachin substation to Culebra substation.

Gorgona is designated as a call station and police protection and executive administration for that town will be furnished from the Bas Obispo police station.

Matachin is designated as a call station and police protection and executive administration for that town will be furnished from the Bas Obispo police station.

The property of the Department of Civil Administration and Quartermaster's Department now on hand at Gorgona and Matachin stations, which is in excess of the requirements of the service, should be turned in to the respective departments.

The records at Gorgona and Matachin stations will be turned in to Empire central station for consolidation with the files of that police district.

The hours of relief for the officers assigned to duty at Gorgona and Matachin call stations will be arranged, so as to permit train service being used for transportation each way, between those stations and Bas Obispo police station.

C. W. BARBER,
Chief of Division.

Changes in Shop Personnel of Mechanical Division.

GORGONA, C. Z., July 21, 1913.

To All Concerned—Effective this date, Mr. S. G. Shearer has been appointed general foreman of Gorgona shops, and will assume the duties formerly performed by myself.

Mr. C. A. Howard has been appointed acting assistant general foreman, and will assume the duties performed formerly by Mr. Shearer until further notice.

Mr. L. W. Mack has been appointed leading man in charge of the Ligerwood shop, and will assume the duties formerly performed by Mr. Howard.

Mr. W. H. Needham has temporarily been appointed leading man in charge of the steamshovel work while Mr. W. G. Brown is on vacation.

J. J. EASON,
Assistant Superintendent.

Appointment of Chief Clerk, Mechanical Division.

GORGONA, C. Z., July 21, 1913.

To All Concerned—Effective this date, Mr. F. G. Swanson has been appointed chief clerk, vice William Taylor, resigned.

J. J. EASON,
Assistant Superintendent.

Rainfall from July 1 to July 19, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
	Inch.		Inch.
<i>Pacific Section—</i>			
Ancon.....	.62	8	2.11
Balboa.....	.55	14	1.79
*Miraflores.....	.55	19	2.69
Pedro Miguel.....	1.40	19	5.01
Rio Grande.....	1.10	7	4.49
<i>Central Section—</i>			
Culebra.....	1.29	7	4.40
*Camacho.....	.79	7	3.31
Empire.....	.97	19	3.95
Gamboa.....	1.56	4	6.46
*Juan Mina.....	1.12	7	4.77
Alhajuela.....	1.03	5	3.44
*El Vigia.....	1.29	5	3.72
*Gorgona.....	1.31	19	4.68
*Prijoles.....	1.39	4	5.53
*Monte Lirio.....	1.70	1	5.73
<i>Atlantic Section—</i>			
Gatun.....	3.04	1	6.54
*Brazos Brook.....	1.24	16	6.62
Colon.....	2.42	9	9.09
†Porto Bello.....	3.30	7	12.47

*Standard rain gage—readings at 5 p. m. daily; automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., July 18.

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa, at 9 o'clock Tuesday, Thursday and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule for moving picture exhibitions for the week July 28 to August 2 is, as follows: Monday, Gorgona; Tuesday, Cristobal; Wednesday, Culebra; Thursday, Empire; Friday, Corozal, and Porto Bello; Saturday, Gatun.

CULEBRA.

One hundred and fifty people attended the exhibition of the moving pictures, "From the manger to the Cross," on Sunday evening, July 20. Mr. C. C. Pearsall furnished the piano music.

EMPIRE.

On Monday evening, July 21, a large number of Empire people enjoyed the exhibition of oil paintings of Panama, Colon, Culebra Cut, and other places of interest along the line, which were made by Mr. J. M. Gleason of New York.

The handicap pool tournament closed recently with the following men as winners: Mr. George Dryden, first prize, having won 17 games and lost but two; Mr. McCullough, second, with 13 games out of 20, and Mr. Jacques, third, with 14 games out of 19.

Mr. DeCora holds first place in the handicap handball tournament.

GORGONA.

There will be a farewell entertainment at the clubhouse on Friday evening, July 25. All former residents of Gorgona, as well as the public generally, are invited to attend.

GATUN

The "Lock City" duckpin tournament promises to be one of the most enthusiastic bowling contests which the clubhouse has ever conducted. The following teams compose the league:

Office force, McClintic-Marshall Company—Wurster, J. O. Childers, Furlong, Wilson, McMahon, Hess.

Field force, McClintic-Marshall Company—W. B. Childers, Tucker, Bellringer, Conley, Galloway, Harper. *Lock Gate Inspectors*—Dumville, Claherty, Quinn, Sloan, Briggs, Roberts.

First Division—Hodges, Humphries, Easter, Matter, Ragan, Grover.

American Bitumastic Enamel Company—Gray, Gibson, Farley, Peck, Duer.

Atlantic Division—Wells, Barte, Coleman, Brown, Dennis, Gilbert.

Gold and silver medals will be given as prizes. The first match games of the series were held on Thursday evening, July 17, when the bowling alleys were filled to their seating capacity. Archer's brass band of New Gatun furnished the music. The results were: McClintic-Marshall office force, 2; Bitumastics, 1; McClintic-Marshall field force, 3; Inspectors, 0.

On Friday evening, July 18, the results were: First Division, 2; Atlantic Division, 1.

A ladies' bowling carnival was held at the clubhouse on Wednesday evening, July 16. About 75 people were present. The winners of the "Open" contest were Mr. Harper and Mrs. Meise; and of the "Married folks," contest, Mr. and Mrs. M. Conley.

Motion pictures entitled "From the manger to the Cross," illustrating scenes in the life of Christ, will be shown at the clubhouse on Saturday evening, July 26.

Twelve new members joined the association during the week ending July 19.

An interesting program was given at the clubhouse on Saturday evening, July 19. Mr. W. Benton Childers presided, and the following program was given: Piano solo from Mendelssohn, by Mrs. E. T. Gilbert of Gatun; remarks by the presiding officer; address on "Government," by Congressman Robert Crosser of Ohio; violin solo from Kreisler, by Mr. W. W. Whitehead of Corozal; address on "Transportation and parcels post," by Congressman George J. Kindel of Colorado; tenor solo from Wilson, by Mr. W. G. Ross of Empire. An informal reception was held after the exercises, during which refreshments were served.

Mr. D. C. Galloway won first prize in the elimination pool tournament recently conducted. Mr. Pettit was awarded second prize.

CRISTOBAL.

A class in Spanish was organized on Friday night July 18. Those who have made some study of the language before are urged to join the intermediate and advanced classes.

A special set of films entitled "From the manger to the Cross" will be shown on Sunday night, July 27, at 8.30 o'clock. Admission will be free.

The Gatun ladies' bowling team defeated the Cristobal ladies' team on Tuesday afternoon, July 15, two out of three games of duckpins.

The local chess players organized a club on Monday night, electing a president and a secretary.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.
Retail prices of cold storage provisions for the week beginning July 23, 1913:

FRESH MEATS.	Price
Mutton—Stewing, per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire forequarter (not trimmed, 10 pounds and over), per pound.....	8
Leg (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Legs (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	17
Chops, per pound.....	26
Loin for roasting, per pound.....	26
Cutlets, per pound.....	30
Backbone, per pound.....	15
Beef—Suet, per pound.....	2
Soup, per pound.....	5
Stew, per pound.....	8
Plate, per pound.....	9
Corned, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Chuck, roast, 3 lbs. and over, per pound.....	12
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds), per pound.....	18
Pot roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, Chuck, per pound.....	12½
Round, per pound.....	13
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds) per pound.....	20
Tenderloin (Western), per pound.....	30
Pork—Loin chops or roast, per pound.....	17
Hams, fresh, per pound.....	\$20
Shoulders, fresh, per pound.....	\$17
Spare ribs, per pound.....	15
Backbones, per pound.....	1½
Pigs' feet, each.....	7
Pigs' heads, ½-head.....	60
Sausage meat, fresh, per pound.....	20
MISCELLANEOUS.	
Livers—Beef, per pound.....	11
Calf, each.....	60
Half, each.....	30
Steak, Hamburger, pkg.....	13
Sausage—Bologna, per pound.....	13
Frankfurter, per pound.....	13
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	20
Pork sausage meat, per pound.....	20
Sweetbread, beef, per pound.....	40
Eggs, fresh, dozen.....	29
one-half dozen only.....	15
Bluefish, per pound.....	15
Halibut, fresh, per pound.....	15
Roe shad, each.....	75
Shad roes, pair.....	40
POULTRY AND GAME.	
Chicken—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds, each.....	1.25
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00
Fowls, each.....	1.00
Ducks, (Western, about 4½ pounds), each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	50
Rabbits, skinned, each.....	30
Ducks, blackhead, pair.....	60
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants, per pair.....	1.30
CURED AND PICKLED MEATS.	
Ham—Sugar cured, per pound.....	20
Sliced, per pound.....	22
Half, for boiling, per pound.....	21
Boiled, per pound.....	28
Hocks, per pound.....	18
Beef, salt, family, per pound.....	12
Bacon—Breakfast, whole piece, per pound.....	25
Sliced, per pound.....	26
Ham, lunch, per pound.....	32
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00
Pigs' feet, per pound.....	9
Tongues, per pound.....	18
DAIRY PRODUCTS.	
Butter—Creamery, special, per pound.....	34
Sheffield Farms, extra fancy, per lb.....	46

	Price.
Cheese—Philadelphia cream, cake.....	10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28
Cheese—Edam, each.....	1.00
Edam, tin.....	25
Parmesan, per pound.....	35
Gouda, per pound.....	30
Snappy, per cake.....	10
Milk (Certified), per bottle.....	20
Fer-mil-lac, bottle.....	20
Ice cream, quart.....	25
½-gallon.....	50
VEGETABLES AND FRUITS.	
Beets, per pound.....	3
Celery, per head.....	10
Cabbage, per pound.....	4
Cucumbers, per pound.....	7
Carrots, per pound.....	3
Cauliflower, per pound.....	15
Egg plant, per pound.....	6
Lettuce.....	12
Onions, per pound.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	2
Parsnips, per pound.....	3½
Parsley, bunch.....	8
Peppers, green, per pound.....	5
Rhubarb, per pound.....	4
Squash, per pound.....	5
Turnips, per pound.....	4
Tomatoes.....	6
Apples, per pound.....	8
Cantaloupes, each.....	47
Grape fruit, tropical, each.....	4
American, each.....	10
Lemons, dozen.....	136
Limes, per hundred.....	80
Oranges, Jamaican, per dozen.....	18
Watermelons, each.....	35

*Indicates reduction from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advance on last list.
‡Fowls weigh each about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock, next lightest weight is supplied and refund note sent for difference.
§Sold only from commissaries; no orders taken for delivery.
§Not less than half of a fresh ham or shoulder will be sold.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, July 19, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela	Gamboa.	Gatun Lake.*
Sun., July 13.....	126.2	92.6	52.0	52.0
Mon., July 14.....	126.4	93.0	52.2	52.1
Tues., July 15.....	126.8	93.2	52.3	52.3
Wed., July 16.....	126.4	93.0	52.4	52.4
Thurs., July 17.....	126.5	92.4	52.5	52.5
Fri., July 18.....	126.6	93.0	52.6	52.6
Sat., July 19.....	126.0	92.4	52.8	52.8
Height of low water to nearest foot.....	125.0	91.0	44.0	

*Sluice gates in spillway closed on June 27, 1913, with water at elevation 48.25.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending August 2, 1913:

DATE.	High	Low	High	Low	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
July 27.....	3.21	9.24	4.05	9.54	
July 28.....	4.16	10.20	5.05	11.00	
July 29.....	5.22	11.25	6.08		
		P.M.			
July 30.....	12.12	6.30	12.34	7.10	
July 31.....	1.20	7.34	1.30	8.07	
Aug. 1.....	2.19	8.32	2.35	9.00	
Aug. 2.....	3.11	9.23	3.27	9.48	

75th meridian time.

Canal Zone Revenues.

Collections other than postal collections during the month of June, 1913, were as follows:

Bicycle, chauffeur, and navigator licenses.....	\$ 59.00
Motor vehicle licenses.....	153.00
Steamboat inspection.....	442.00
Corporation tax.....	100.00
Deputy collectors of revenues.....	14,658.05

NONREVENUES.

Cash received from estates.....	2,117.94
Value of estates closed.....	1,685.80

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Colon.....	P. R. R. Saturday.....	July 19
Advance.....	P. R. R. Saturday.....	July 26
Panama.....	P. R. R. Friday.....	Aug. 1
Allianca.....	P. R. R. Thursday.....	Aug. 7
Colon.....	P. R. R. Tuesday.....	Aug. 12
Advance.....	P. R. R. Tuesday.....	Aug. 19
Panama.....	P. R. R. Monday.....	Aug. 25
Allianca.....	P. R. R. Saturday.....	Aug. 30

CRISTOBAL TO NEW YORK.

Allianca.....	P. R. R. Saturday.....	July 26
Colon.....	P. R. R. Thursday.....	July 31
Advance.....	P. R. R. Thursday.....	Aug. 7
Panama.....	P. R. R. Wednesday.....	Aug. 13
Allianca.....	P. R. R. Tuesday.....	Aug. 19
Colon.....	P. R. R. Sunday.....	Aug. 24
Advance.....	P. R. R. Sunday.....	Aug. 31

NEW YORK TO COLON.

Metapan.....	U. F. C. Wednesday.....	July 16
Magdalena.....	R. M. Saturday.....	July 19
Tivives.....	U. F. C. Saturday.....	July 19
Prinz August Wilhelm.....	H. A. Saturday.....	July 19
Zacapa.....	U. F. C. Wednesday.....	July 23
Emil L. Boas.....	H. A. Saturday.....	July 26
Sixaola.....	U. F. C. Saturday.....	July 26
Almirante.....	U. F. C. Wednesday.....	July 30
Prinz Joachim.....	H. A. Saturday.....	Aug. 2
Carrillo.....	U. F. C. Saturday.....	Aug. 2
Danube.....	R. M. Saturday.....	Aug. 2
Santa Marta.....	U. F. C. Wednesday.....	Aug. 6
Pastores.....	U. F. C. Saturday.....	Aug. 9
Carl Schurz.....	H. A. Saturday.....	Aug. 9
Metapan.....	U. F. C. Wednesday.....	Aug. 13
Prinz August Wilhelm.....	H. A. Saturday.....	Aug. 16
Tivives.....	U. F. C. Saturday.....	Aug. 16
Tagus.....	R. M. Saturday.....	Aug. 16

COLON TO NEW YORK.

Santa Marta.....	U. F. C. Thursday.....	July 24
Carl Schurz.....	H. A. Tuesday.....	July 29
Pastores.....	U. F. C. Tuesday.....	July 29
Metapan.....	U. F. C. Thursday.....	July 31
Prinz August Wilhelm.....	H. A. Tuesday.....	Aug. 5
Tivives.....	U. F. C. Tuesday.....	Aug. 5
Tagus.....	R. M. Tuesday.....	Aug. 5
Zacapa.....	U. F. C. Thursday.....	Aug. 7
Emil L. Boas.....	H. A. Tuesday.....	Aug. 12
Sixaola.....	U. F. C. Tuesday.....	Aug. 12
Almirante.....	U. F. C. Thursday.....	Aug. 14
Prinz Joachim.....	H. A. Tuesday.....	Aug. 19
Carrillo.....	U. F. C. Tuesday.....	Aug. 19
Oruba.....	R. M. Tuesday.....	Aug. 19
Santa Marta.....	U. F. C. Thursday.....	Aug. 21
Carl Schurz.....	H. A. Tuesday.....	Aug. 26
Pastores.....	U. F. C. Tuesday.....	Aug. 26

NEW ORLEANS TO COLON.

Abangarez.....	U. F. C. Saturday.....	July 19
Heredia.....	U. F. C. Wednesday.....	July 23
Atenas.....	U. F. C. Saturday.....	July 26
Parismina.....	U. F. C. Wednesday.....	July 30
Turrialba.....	U. F. C. Saturday.....	Aug. 2
Cartago.....	U. F. C. Wednesday.....	Aug. 6
Abangarez.....	U. F. C. Saturday.....	Aug. 9

COLON TO NEW ORLEANS.

Turrialba.....	U. F. C. Thursday.....	July 24
Cartago.....	U. F. C. Saturday.....	July 26
Abangarez.....	U. F. C. Thursday.....	July 31
Heredia.....	U. F. C. Thursday.....	Aug. 2
Atenas.....	U. F. C. Thursday.....	Aug. 7
Parismina.....	U. F. C. Saturday.....	Aug. 9

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays at 3 p. m.; ships for New York via Kingston on Tuesdays at 1.30 p. m. and Thursdays at 1.30 p. m.; for Bocas del Toro on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct, Tuesdays at 3 p. m.

Hamburg-American steamers sail for New York, via Kingston and Santiago de Cuba, on Tuesdays; the Prinz Joachim and Prinz August Wilhelm at 10 a. m., and the Emil L. Boas and Carl Schurz at 2 p. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending July 21:

Arrivals—July 14, Mantaro, from south ports; July 16, Palena, from Valparaiso.

Departures—July 16, Ecuador, to Guayaquil; July 18, Manavi, to Ecuadorian ports; July 19, Pennsylvania, to San Francisco.



The Canal Record

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No communication, either for publication or requesting information will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Oil Storage Areas for Individuals and Companies.

The Canal Commission is now in position to make assignments of land for oil storage at the Atlantic and Pacific ends of the Canal. It is the purpose of the Commission to install the necessary oil pumping plant at the water fronts, and to run the oil mains from there to the vicinity of the oil tanks. The area assigned for the tanks at the Pacific terminus is on Balboa dump, south of the Union Oil Company's station, and west of the railroad track to the breakwater. The ground there is from 25 to 45 feet above mean sealevel, and suitable for the erection of tanks, with little or no grading. The area set aside at the Atlantic end is immediately east and south of Mount Hope cemetery. This area was previously reserved for oil tanks for the Commission. Since then, applications, which have been received from individuals and companies, indicate that private organizations will furnish a sufficient supply, therefore, practically all of the area heretofore reserved, together with the area between the cemetery and the old East Diversion, may be assigned to individuals and companies, with the exception of space for two additional tanks for the Canal Commission. The use of the land required for private storage tanks will be granted under revocable leases, or licenses. It is probable that the tanks will be required to be spaced about 300 feet apart. In view of the fact that there will probably be ample ground to meet all demands, and, as the Commission will run its own supply and delivery pipes from the water fronts to the general tank areas, there is practically no choice of location.

Bohio Fluviograph Station Demolished.

The fluviograph station formerly standing on the east bank of the Chagres River at Bohio was destroyed by dynamite on July 12. The first charge tore off the wooden house where the instruments were kept, and

the second demolished the brick tower. The explosive tore the base of the structure away well below the existing water line, so that when the lake is at its normal height, no obstruction will be offered. The station was established by the French some time previous to 1890, and was in use by the Canal Commission up to the time the lake began to fill.

New Concrete Storage Building at Corozal.

The committee, consisting of Lieut.-Col. T. C. Dickson, chairman; Capt. R. E. Wood, Mr. H. O. Cole, Mr. E. E. Lee, and Mr. C. W. Northrop, appointed to report to the Chairman and Chief Engineer on facilities for distributing cement after August 1, and the construction of a new building for storage, has recommended that a 200-foot length of the cement storehouse west of Miraflores Locks be moved to a site just west of the Panama railroad at Corozal, and north of the recently erected quartermaster's storehouse at that point. The recommendation of the committee was approved, and the preparation of the site began on July 25.

Besides this site, the committee considered one on the east toe of Sosa Dam, which was deemed insecure for the pressure of 1,500 pounds per square foot to which the area will be subjected; a site between the Panama railroad track to Balboa and the Big Tree yard, approximately north of the new Administration building; and one on the Balboa dump. The latter were considered too small.

The preparation of the site at Corozal will involve the excavation of about 2,400 cubic yards, at an estimated cost of \$1,200, and the laying of about 1,000 feet of track, costing about \$1,250. The cost of moving the portion of the Miraflores storehouse is estimated, as follows: Demolishing and loading, \$1,500; reerecting, \$2,500; concrete foundations, floors, etc., \$3,500; extras, \$500; total \$8,000, making a grand total of \$10,450. This estimate covers the transfer of the requisite number of overhead cranes now installed in the Miraflores shed.

Work on New Water System Begun.

Work in connection with the construction of the new water works for the southern end of the Canal started on July 16, when the forces of the Division of Municipal Engineering began clearing the site for Miraflores pump station, No. 1, located immediately east and north of the north portal of the Miraflores tunnel. The project contemplates taking the water from the Caimitillo arm of Miraflores Lake and pumping it into the purification plant to be located on the top of the Miraflores hill immediately above the Miraflores spillway. The water, after passing through the various processes of purification in this plant, will flow by gravity to a pump station at Ancon, where electric pumps will force the water into the mains leading to Panama, Balboa, and adjacent points. This pump station

will also contain high-service pumps which will be thrown into service during fires. Designs and details for this work are being made in the office of the resident engineer of the Municipal Engineering division.

Dumping of material on the south end of the fill between Pedro Miguel and Miraflores, east of the Panama railroad relocation, and a little north of the tunnel, will be discontinued in view of the fact that the new pumping station and suction chamber of the permanent water supply for the Pacific side will be situated at this point. The fill encroaches on a small basin, fed by the Caimitillo River, and its branches, which the Division of Municipal Engineering desires to keep intact as a reservoir for the pump station intake.

Oil Storage Tanks.

The Canal Commission's two new oil tanks at Mount Hope were completed on June 25, with the exception of painting, and on June 30, in order to test for leaks, water was turned into the higher tank. On July 21, the height of water in the tank was 18 feet six inches. After the tank is filled, an inspection will be made preparatory to its acceptance, after which a similar test will be made on the lower tank. It is expected that rivet work on the two tanks at Balboa will be completed about August 20. Each of the four tanks has a capacity of 42,000 barrels of oil, or a combined storage capacity of 168,000 barrels. Each tank is 93 feet in diameter and 35 feet high. The work of erection is being performed by the Petroleum Iron Works of Sharon, Pa.

Crematory at Ancon.

Award has been made to the Jarvis Engineering Company of Boston for the equipment for a crematory to be built at Ancon cemetery, or at some convenient point in Ancon Hospital grounds, at the price of \$4,370. Bids for the apparatus were opened in Washington on June 5, and five tenders were received. The contract calls for two retorts, each equipped with two Schütte and Koerting burners. The retorts are to be placed side by side, so arranged that repairs can be made to the interior of one while the other is in operation; they must be free of smoke, noise, or odor, with an elapsed time for a complete incineration of not to exceed two hours. The retorts are to be provided with a positive means of collecting and removing the ashes after each cremation.

The burners are designed for using fuel oil. An oil pump and an air blower are to supply sufficient oil and air to the burners to operate, at maximum capacity, both retorts at the same time. They will be driven by 220-volt, 25-cycle, 3-phase, alternating current electric motors, equipped with rheostats and switches mounted on a suitable panel board. The drives from the motors to the air blower and oil pump will be gearless, and will be effected

either by direct gearing or silent chain. The burners are of a type that will permit proper regulation of the mixture of oil and air. The oil line will be fitted with two duplex strainers, one placed on the suction line between storage tank and pump, and the other upon the discharge line between pump and heater. An oil heater, using charcoal as fuel, will be installed to heat the oil before it enters the burners. The contractor is to furnish the cast iron fronts for the retorts, all doors and fixtures for operating same, any special tile required, and all necessary fittings. He is also to furnish the services of an expert to supervise the erection of the crematory, and to instruct the Commission's operator. The Canal Commission will supply all the common building material, erect the oil storage tank, and furnish the necessary labor.

The equipment supplied by the contractor is to include 200 two-quart polished copper cans, and 100 one-quart polished copper cans as ash containers.

Concrete Work in Locks and Spillways.

Concrete work in the Canal locks is nearly completed the aggregate amount in place at the close of work on July 26, being 4,470,666 cubic yards.

A statement of the concrete laid in the three sets of locks for the Canal, and in Gatun and Miraflores spillways, as of July 26, follows:

GATUN LOCKS.		Concrete laid, Cubic Yards
July 21.....		44
July 22.....		136
July 23.....		128
July 24.....		90
July 25.....		64
July 26.....		60
Total.....		522
Previously reported.....		2,042,513
Grand total.....		2,043,035
PEDRO MIGUEL LOCK.		
July 21.....		3
July 22.....		7
July 23.....		7
July 24.....		7
July 25.....		12
July 26.....		29
Total.....		922,079
Previously reported.....		922,108
Grand total.....		922,108
MIRAFLORES LOCKS.		
July 20.....		116
July 21.....		149
July 22.....		48
July 23.....		33
July 24.....		293
July 25.....		131
July 26.....		198
Total.....		968
Previously reported.....		1,504,555
Grand total.....		1,505,523
GATUN SPILLWAY.*		
July 21.....		163
July 22.....		44
July 23.....		150
July 24.....		39
July 25.....		116
July 26.....		20
Total.....		532
Previously reported.....		230,312
Grand total.....		230,844
MIRAFLORES SPILLWAY.		
July 21.....		160
July 22.....		146
July 23.....		219
July 24.....		254
July 25.....		300
July 26.....		364
Total.....		1,439
Previously reported.....		70,644
Grand total.....		72,083

*Includes hydroelectric station.

JOINT LAND COMMISSION.

Opinion as to Status of Occupiers, Etc.

The following opinions were read at the public session of the Joint Land Commission, held on July 25:

Opinion of the Joint Land Commission on the status of settlers or occupiers on public lands in the Canal Zone who went upon such lands subsequent to the ratification of the treaty of February 26, 1904.—It was said by the Supreme Court of the United States, in the case of United States vs. Anguizola, (1 Wall, 352) in passing on certain property rights involved in the territory ceded by Mexico to the United States in 1848:

"They have directed their tribunals in passing upon the rights of the inhabitants, to be governed by the stipulation of the treaty, the law of nations, the laws, usages, and customs of the former government, the principles of equity, and the decisions of the Supreme Court, so far as they are applicable. They have not desired the tribunals to conduct their investigations as if the rights of the inhabitants to the property which they claim, depended upon the nicest observance of every legal formality. They have desired to act as a great nation, not seeking to extend their authority over the ceded country, to enforce forfeitures, but to afford protection and security to all just rights which could have been claimed from the government they superseded."

It is in this spirit that the Commission approaches the question as to the status of occupiers on public lands subsequent to 1903, who were not occupying such lands under leases or revocable licenses issued by the Isthmian Canal Commission. We are fully cognizant of the fact that the courts of the United States hold that occupiers of public lands acquire no rights.

The only question which presents itself is whether this rule of law is applicable to conditions in the Canal Zone.

It is a general principle of international law, that:

"When political jurisdiction and legislative power over a territory are transferred from one sovereignty to another, the municipal laws of the territory continue in force until abrogated by the new sovereign."

This principle was strongly emphasized with reference to the Canal Zone in the instructions from the President of the United States to the Secretary of War, under date of May 9, 1904. The pertinent portion of these instructions reads, as follows:

"The inhabitants of the Isthmian Canal Zone are entitled to security in their persons, property, and religion, and in all their private rights and relations. They should be so informed by public announcement. The people should be disturbed as little as possible in their customs and avocations that are in harmony with principles of well ordered and decent living."

"The laws of the land, with which the inhabitants are familiar, and which were in force on February 26, 1904, will continue in force in the Canal Zone and in other places on the Isthmus over which the United States has jurisdiction until altered or annulled by the said Commission, but there are certain great principles of government which have been made the basis of an existence as a nation, which we deem essential to the rule of law and the maintenance of order, and which shall have force in said Zone. The principles referred to may be generally stated, as follows:

"That no person shall be deprived of life, liberty, or property without due process of law; that private property shall not be taken for public use without just compensation; that in all criminal prosecutions the accused shall enjoy the right of a speedy and public trial, to be informed of the nature and cause of the accusation, to be confronted with the witnesses against him, to have compulsory process for obtaining witnesses in his favor, and to have assistance of counsel for his defense; that excessive bail shall not be required nor excessive fines imposed, nor cruel or unusual punishment inflicted; that no person shall be put twice in jeopardy for the same offense, or be compelled in any criminal case to be a witness against himself; that the right to be secure against unreasonable searches and seizures shall not be violated; that neither slavery nor involuntary servitude shall exist except as a punishment for crime; that no bill of attainder or *ex post facto* law shall be passed; that no law shall be passed abridging the freedom of speech or of the press, or of the rights of the people to peaceably assemble and petition the government for a redress of grievances; that no law shall be made respecting the establishment of religion or prohibiting the free exercise thereof."

In the consideration of this question, the Commission has also given weight to certain principles, which, in view of the exceptional conditions prevailing in the Canal Zone, acquire much weight.

The Canal Zone was acquired for the definite purpose of constructing a great international highway. To accomplish this purpose, the United States acquired complete control over this territory and has exercised a vigilant police power.

The plainest principles of equity required that, in

a territory where the inhabitants had been accustomed, from time immemorial, to go upon public lands for the purpose of cultivating small tracts in order to secure a livelihood, the United States Government give peremptory notice that "squating" would not be permitted on the public lands of the United States and that such occupiers would be removed without compensation.

It is a further fact worthy of consideration that no attempt was made clearly to define the precise boundaries of public lands, and that in most cases, there was nothing to indicate to the claimants, now under consideration, whether their improvements were being made on public or private lands. The fact that the agents of the United States did not know the exact limits of such public lands is indicated by the fact that in some instances they undertook to issue leases for land which belonged to private parties.

Not only has there been some uncertainty on the part of the government as to the precise boundaries of public lands, but there has also existed much confusion in the public mind as to the limits of public property, because of the fact that by the frequent acquisitions by the United States, either through purchase or expropriation proceedings, land formerly known as private land has been converted into public land. These uncertainties would greatly complicate the situation, if a rule were adopted denying to occupiers of public lands, rights which have been recognized with respect to occupiers of private lands.

In arriving at any conclusion with reference to occupiers of the public lands of the United States within the Canal Zone, the exceptional governmental and legal conditions prevailing in this strip of territory must never be lost sight of. In this connection the following considerations deserve particular attention:

First—The laws of the United States do not extend *ex proprio vigore* to the Canal Zone. Some positive act of the Government of the United States is necessary in order to extend the operation of such laws. The Commission finds no trace of any positive action of the United States to indicate that the Colombian law governing the rights of cultivators to compensation for improvements (Law No. 48 of 1882) was to be regarded as abrogated. In the case of the United States vs. Andrade (Canal Zone Supreme Court Reports, Vol. 1, p. 69) the Supreme Court of the Canal Zone had occasion to pass on the rights accruing under this law. It is true that the case involved the question of compensation for improvements made prior to American occupation, but if the law continued in force subsequent to such occupation the principles to be applied remain the same. In the course of its opinion in this case the Supreme Court said:

"In regard to the rights of settlers upon public lands, Law 48 of 1882 contains, besides Art. 2, above quoted, Art. 5, which reads, as follows:

"Art. 5 of Law 48 of 1882: 'In case a cultivator should be deprived of his property through due process of law, he shall not be dispossessed of the land occupied by him without first being indemnified to the extent of the value of the improvements made on the land, as possessor in good faith of the land.'

"Improvements shall consist of clearing of the land, embankments, cultivation and dwellings, the value of which shall be appraised by experts, as provided for in the Judicial Code of the nation or of the state in which the adjudicated land is located."

"Until the value of such improvements shall have been paid, there shall not exist against the possessor any action for ejectment from the land."

"The defendant, besides being considered to all effects by law as a possessor in good faith of the land occupied by him, and having occupied it undisturbedly (?) with the knowledge and consent of the Colombian authorities, is entitled to the right provided for by Art. 739 of the Civil Code, which article provides for the payment of the improvements made on the land."

Second—Long before the institution of these proceedings before the Joint Land Commission, the right of occupiers to compensation for improvements made on private lands was generally recognized by the Government of the Canal Zone. In the instructions issued by the Chairman and Chief Engineer of the Isthmian Canal Commission in Circular No. 301, dated January 7, 1910, we find the following clause:

"Should there be any buildings or crops located within the area to be covered by the waters of Gatun Lake and outside of the Canal channel upon lands belonging to private parties, the owners will be paid the actual value of such buildings or crops at the time the water reaches the property."

In other words, the Government of the Canal Zone has recognized, and continues to recognize, the right to compensation of occupiers on private lands, a right not founded upon any doctrine of American Law, for most of such persons, under standards of American Law are mere trespassers on private property, and such trespass cannot give rise to a right. If, therefore, the right of such persons to compensation is recognized, such right can only rest on one or both of the following principles.

(a) Article 730 of the Civil Code of Panama.

(b) A broad spirit of equity in dealing with the exceptional conditions prevailing on the Canal Zone.

In short, persons who under American Law would be considered as mere trespassers on private property, have received repeated and continuous recognition of their right to compensation for their improvements. If Article 739 of the Civil Code of Panama remains in force with reference to occupiers on private lands, it would seem but just and equitable that Article 5 of the Cultivators' Law (Law No. 48 of 1882) should be recognized as remaining in force with reference to the right to compensation for improvements made on public lands, thus preserving to such occupiers the same rights which they enjoyed prior to the treaty of November 18, 1903.

Third—A further circumstance to which the Commission has given due weight is the fact that the instructions of the President of the United States, dated May 9, 1904, after prescribing with much emphasis, that the people of the Canal Zone "should be disturbed as little as possible in their customs and avocations that are in harmony with principles of well-ordered and decent living," directs that:

"The laws of the land with which the inhabitants are familiar and which were in force on February 26, 1904, will continue in force in the Canal Zone and in other places on the Isthmus over which the United States has jurisdiction, until altered or annulled by the said Commission."

These instructions clearly indicate that the Government of the United States was not only prepared to assure to the people of the Canal Zone the full and undisturbed enjoyment of their property rights, but was anxious to avoid any action the effect of which would be to destroy any property or property rights which were recognized by the laws, customs, and traditions of the people as they existed prior to the treaty of November 18, 1903.

In fact, that the Government of the Canal Zone is distinctively an executive government, and that the President of the United States, in whom full authority over the Canal Zone was vested by the Act of April 28, 1904, expressed himself unequivocally with reference to the preservation of the property rights of the people, together with the further fact that there is nothing to indicate any intent to abrogate Article V of the Cultivators' Law of 1882, but that on the contrary there are many circumstances which tend to show that it was intended that this article should remain in force, justify the conclusion that any rights, which may have accrued by reason of the operation of Article V of Law No. 48 of 1882, are entitled to full consideration by this Commission.

Reasoning, therefore, from the constitutional and legal status of the Canal Zone, the exceptional situation created by the fact that the decision to remove inhabitants from the Zone was not made until nearly ten years after the conclusion of the treaty of November 18, 1903, and taking into consideration the principles of law which govern property rights in this territory, the Commission has reached the conclusion that Article V of the Cultivators' Law of 1882, in force in the Canal Zone at the time of the conclusion of the treaty of November 18, 1903, has not been abrogated by any action of the United States and still remains in force, and that, therefore, those persons who, complying with the provisions of this act, have made improvements on public lands, are entitled to compensation for the value of such improvements, and awards will be made accordingly.

There still remains for determination, the status of those persons who went on public lands after the ratification of the treaty of February 26, 1901, and who, subsequent to such occupancy, accepted licenses issued by the Isthmian Canal Commission.

With reference to claimants included in this category, it is evident that if they had acquired any rights at the time of the acceptance of these licenses, such acceptance did not divest them of the rights which had accrued prior to the date of the issuance of the license. Their claims, therefore, so far as they relate to rights accrued prior to the acceptance of the licenses, are within the jurisdiction of the Commission and should be adjudicated accordingly.

(Signed) FEDERICO BOYD, ROLAND P. FALKNER, SAMUEL LEWIS, L. S. ROWE, Commissioners.

Opinion Regarding Claim of Heirs of Carlos Icaza Arosemena, and Others.

In the matter of the claim of the heirs of Carlos Icaza Arosemena, heirs of Francisco Aranda, heirs of Vicente and Luis E. Alfaro (Alfaro Brothers), and Remigio Dutary C., for the loss of free passage on Panama railroad in re lands of Bailamonos. Docket No. 294; July 16, 1913.—By agreement dated December 31, 1885, the predecessor in interest of the present claimants granted to the Panama Railroad Company a right-of-way for its double track across the lands of Bailamonos Norte on condition that they be given free passage with baggage rights, for themselves, their wives, direct descendants, and servants.

These claimants presented to the Joint Commission

of 1908 a claim for damages. In the final report of the Commission we find the following statement:

"In the cases of Peñas Blancas en Medio and Bailamonos, damages were claimed on account of the fact that the Panama Railroad Company had issued passes over its railroad for the benefit of the landowners or landholders in consideration of being given a right-of-way over the estates affected. We have not considered such claims in estimating the damages, but reserved to the parties any rights they may have to enforce such claims in the premises."

Subsequent to the presentation of this claim to the Joint Commission of 1908, the question of damages arising out of the refusal of the Panama Railroad Company to continue the issuance of passes, was presented to the Supreme Court of the Republic of Panama, which tribunal passed on all the questions of law involved. In this opinion, dated August 8, 1912, the Court holds:

First—That with reference to the refusal of the Panama Railroad Company to issue passes prior to the date of the award of the Joint Commission of 1908, the claimants be required to establish in a separate suit the quantum of damages suffered, and that the Panama Railroad Company pay to the claimants the amount of such when once established.

Second—That with reference to any claims for damages arising out of the failure of the Panama Railroad to issue passes subsequent to 1908, the expropriation of that portion of the lands of Bailamonos occupied by the Panama Railroad Company "terminated any rights of the parties who originally created the easement. The transfer of the property took place by reason of conditions (fuera mayor ó caso fortuito, Art. 1, Law 95 of 1890), causes not chargeable to the railroad company, (Art. 1604 of the Civil Code) because it was not the railroad company which contracted with the Government of the Republic for the construction of the Canal, authorizing the expropriation of private lands."

Having taken into consideration:

First—The opinion of the Supreme Court of the Republic of Panama, dated August 8, 1912;

Second—That the claim now under consideration cannot have any relation to that portion of the estate of Bailamonos Norte, which is the subject of expropriation proceedings before this Commission; and,

Third—The fact that the right of free passage granted to the claimants by the agreement of December 31, 1885, was in the nature of a covenant running with the land, and that, as has been clearly stated by the Supreme Court of Panama, the expropriation proceedings under which the United States acquired title to that part of the estate of Bailamonos Norte over which the Panama railroad enjoyed a right-of-way, terminated any right of free passage so far as the present claimants are concerned;

The Commission has reached the conclusion that this claim be dismissed without award, and an order to this effect is entered accordingly.

(Signed) FEDERICO BOYD, ROLAND P. FALKNER, SAMUEL LEWIS, L. S. ROWE, Commissioners.

Opinion Regarding Status of Certain Claimants on Lands of Bailamonos Sur.

Opinion of the Commission with reference to the effect on occupiers of the warranty clause contained in the deed of May 1, 1909, under which the United States took title to that portion of the estate of Bailamonos Sur, below the 87-foot contour line. Docket No. 276, July 22, 1913.—In the deed under which the United States acquired that portion of the estate of Bailamonos Sur below the 87-foot contour line, the following warranty clause is found:

"To have and to hold the above designated and described lands, together with all rights, claims, leasehold interests, and demands of whatever nature appertaining thereto unto the said United States of America, its successors, or assigns forever; we do hereby for ourselves and for our heirs, administrators, executors, and assigns, covenant and agree to warrant and defend these lands unto the United States of America, its successors and assigns, against the lawful claims and demands of all persons whomsoever, and we do hereby likewise release and surrender any and all claims for actual or consequential damages to the said lands which may have heretofore been caused or claimed by reason of the action of the Isthmian Canal Commission, the Panama Railroad Company, or any of their agents, servants, or employees."

It has been urged upon the Commission that this clause saves the United States free from all claims that may be presented by persons who, at the time the property was purchased, had acquired an interest in the lands or a right to compensation for improvements made thereon, and that such persons must seek compensation by action against the grantors.

The covenant of warranty contained in the deed of May 1, 1909, is in the nature of a personal covenant, the breach of which entitles the grantee to the recovery of damages, but which does not affect the rights or status of third parties, whose rights had accrued prior to the date of this deed. This covenant is similar to the covenant of "evicción y saneamiento" provided for

in Articles 1893 to 1913, inclusive, of the Civil Code.

The Commission, after taking into consideration the terms of the covenant of warranty contained in the deed of May 1, 1909, and the provisions of Articles 1880 to 1913, inclusive, of the Civil Code, has reached the conclusion that where rights accrued to any persons occupying that portion of the estate of Bailamonos purchased by the United States by deed of May 1, 1909, which rights had accrued prior to the date of said instrument, the covenant of warranty contained therein does not debar such persons from presenting and prosecuting their claims against the United States before this Joint Commission.

The attention of the Commission has been called to an agreement for the sale of a portion of the estate of Bailamonos Sur, made and entered into the 11th day of July, 1908, by and between Gen. Rafael Aizpuru, of the first part, and the Isthmian Canal Commission on behalf of the United States of America, represented by its general counsel, Richard Reid Rogers, of the second part. This agreement contains the following clauses:

Fourth—The United States of America or the Isthmian Canal Commission, as the case may be, shall allow the said first party to retain the use and possession of the said lands herein agreed to be conveyed, free of rental, until such time as the same may be occupied or flooded by the operations of the said second party, at which time the said first party shall be authorized to remove at his own expense, fences or other improvements belonging to him.

Fifth—The United States of America agrees to assign to the said first party its rights to the rents and profits that may be derived from such part or portion of said lands that are now occupied by tenants or other occupants, until such time as they may be compelled to vacate on account of the inundation of said lands, and in consideration thereof, the said first party undertakes to see that the said tenants and occupants shall remove their houses and other movable improvements without any claim for damages against the said second party."

It is the contention of Counsel for the United States that the contract of July 11, 1906, is ratified and continued in force by the deed of May 1, 1909, and that the clauses quoted indicate, so far as occupiers on the land are concerned, the specific intent of the covenant of warranty. If these contentions are sustained, they may have an important bearing upon the obligations assumed by the vendor, but it is not necessary for the Commission to consider in this connection the relative rights and obligations of grantor and grantee. Certain claims have been presented, and the only question before the Commission is whether awards may be made in these cases.

Whatever may have been the relationship created and now subsisting between the parties to this agreement, the Commission is of the opinion that from the time the United States acquired the title to the property by deed of May 1, 1909, the status of third persons who had acquired an interest in the land, as occupiers of the same, was not affected by the terms of the agreement of July 11, 1908.

The Commission has, therefore, reached the conclusion that whatever rights the United States may possess against the grantors, growing out of the deed of May 1, 1909, and the preceding agreement of July 11, 1906; those persons who have acquired, prior to the date of said deed, and interest in, or a right to, compensation for improvements on that portion of the estate of Bailamonos Sur covered by the said deed, may assert such right or interest against the United States, and that it is within the jurisdiction of the Commission to make awards in proper cases.

(Signed) FEDERICO BOYD, ROLAND P. FALKNER, SAMUEL LEWIS, L. S. ROWE, Commissioners.

Additional Awards.

The following awards have been made by the Joint Land Commission since last report:

Award No. 14. In the matter of the claim of Marco Antonio and Tomas Posada—To Marco Antonio Posada and Tomas Posada in equal shares, for the settlement of all rights, claims, or other interests in all growing crops, fruit trees and buildings, and all other improvements of every kind, and claims in the land which they occupy, located near the town of Gorgona, to the south of the road leading from Gorgona to Matichin, but excluding property in the town of Gorgona, \$3,500.

Award No. 15. In the matter of the claims of occupiers located in the area comprised between Gatun and Gamboa, and east of the Canal prism—To the following owners of improvements of every kind, and all other rights and claims in land located as above described: Baldomero Acosta, \$170; Clementina Acosta, \$100; Francisco Acosta, \$75; Jules Amable, \$300; José Vicente Barcasnegro, \$125; Zachia Barrett, \$150; William Brown, \$800; Thomas Carter, \$350; Sergio Cuervo, \$45; Charles R. Grant, \$400; George Hamilton, \$125; Samuel Hilton, \$50; Joseph Lozier (Logie), \$125; Julian Martinez, \$125; Antonio Silva, \$50; Boque Zalas, \$125. Total, \$3,115.

DARIEN RADIO STATION.

New High Power Plant will Communicate with Washington Direct.

Construction is to begin shortly on the large Naval radio station at Caimito, to be known as the Darien Radio Station. This is to be a 100-kilowatt plant, of the same power as the Arlington station, near Washington. In the size of its towers it will exceed the latter; all of the three masts will be 600 feet high, whereas at Arlington one of the towers is 600 feet in height, and two are 450 feet high. The bases of the towers will be about 180 feet above sealevel, and they will be arranged in a triangle, approximately 900 feet on a side. The sending and receiving radius will be nominally 3,000 miles, so that communication may be held direct with the Arlington station, instead of by way of Key West, as at present. The station will be able to "talk" to San Francisco, 2,785 miles away by air line. The present stations at Colon and Balboa will be continued in use, to handle messages for ships using the Canal, and the Caimito station will be used exclusively for official business of the Government, principally as a relay station for communicating with ships of the Navy in southern waters. It will be able to send messages as far as Valdivia, 421 miles south of Valparaiso; and, on the Atlantic side of South America, as far down as Buenos Aires. It could reach a vessel anywhere along the eastern coast of the United States, or midway between New York and Gibraltar, on the Mediterranean route; in approximately east and west lines, it could communicate with the island of St. Vincent, 500 miles west of Africa. In sending, the station will use the Poulsen wireless apparatus, employing sustained oscillations, considered an improvement on the spark method. Situated between the Canal and the Panama railroad, its antenna will span an arm of Gatun Lake. The water will afford good electrical grounding, and furnish the waves a good "grip" in starting. The Federal Company, which is operating stations along the west coast of North America, has the contract for furnishing the apparatus. The Navy Department has authorized the Isthmian Canal Commission to construct the following buildings, at estimated costs as shown: Power house, \$7,800; operating buildings, \$4,600; quarters for operators, \$7,600; total, \$20,000. The Penn Bridge Company is the contractor for the towers; the concrete footings for them will be installed by the Canal Commission. Forces of the Quartermaster's Department will have charge of the work to be done by the Commission. Lieut. R. S. Crenshaw, U. S. Navy, is stationed on the Isthmus in charge of radio stations.

Board of Appraisal.

A board of appraisal has been appointed to fix the value, preparatory to a sale, of buildings and equipment that have become obsolete, or are no longer necessary in connection with the Canal work. The members are H. S. Farish, chairman; C. L. Parker, and C. T. Cushman.

The board meets once a week, and all matters properly coming before it will be disposed of at these meetings. Arrangements have been made whereby all requests for appraisal of material in stock, or in the obsolete storehouse, will be forwarded to the board through the depot quartermaster, while all requests for appraisal of equipment or buildings will

come through the Chief Quartermaster. The depot quartermaster has been instructed to procure the necessary information on requests for appraisal made of him in advance, in order that the board can take intelligent action at its sessions. In case articles are at points other than the depot, the board is to be furnished with definite information as to location, so that there may be no delay in inspection. The depot quartermaster has been advised that he is expected to furnish the necessary clerical work for the proper keeping of records of the minutes of each meeting, and to see that all papers are properly filed. It has been found that the work of the board will require more time than was first anticipated, and that as the Canal work draws to a close, the number of appraisals will increase. On this account, and in view of the fact that all of the members of the board have their time taken up with other work, the making of appraisals at other times than the regular meetings is to be reduced to a minimum. Every item appraised is to be inspected by some member of the board, and in some instances inspection will probably require the presence of the entire board.

Panama Tramways Ready for Service.

The Panama Tramways Company will open its Central Avenue line to the public on August 1, at 2 p. m. The service will be, as follows: Cars will leave the National Palace every 10 minutes for Hotel Tivoli and Ancon Hospital station, and *vice versa*. The fare will be five cents, United States currency, between any two points on the line in one direction only. Each person is expected to have the proper amount of fare ready when boarding car as the conductor will have no access to the money, and will not be obliged to give change. To avoid dispute, conductors are supposed to see the coin before it is deposited in the fare box. Passengers will be required to board the car by the left hand rear door and leave by the front door.

The following regulations have been issued:

1. No disorderly or otherwise obnoxious person, whether, or not, under the influence of liquor, will be allowed to board the cars.
2. No person suffering from any contagious or infectious disease, or whose clothing is in such a state that it might prove objectionable to other passengers, will be admitted into the cars.
3. Smoking and spitting in the cars is strictly prohibited.
4. No dogs, or other animals, nor birds, will be permitted within the cars.

After the opening day, the cars will run on the Central Avenue line in accordance with the following schedule:

	Week days	Sundays and holidays
	A. M.	A. M.
First car from National Palace for Ancon.....	5.40	6.40
	P. M.	P. M.
Last car from National Palace for Ancon.....	11.30	11.30
	A. M.	A. M.
First car from Ancon for National Palace.....	5.55	6.55
	P. M.	P. M.
Last car from Ancon for National Palace.....	11.45	11.45

As soon as possible, there will be a formal opening ceremony, immediately after which all lines will be thrown open to the public.

Wandering Herd.

A meeting of the Wandering Herd will be held at Empire, Sunday, August 3, at 8.30

a. m., to form plans for a Labor Day outing. J. H. KEEFE, President.

PERSONAL.

Maj. Gen. George W. Davis, U. S. A., (retired), the first head of the Canal Zone Government, accompanied by his daughter, Miss Elsie Davis, is spending a few days on the Isthmus. They are at the Hotel Tivoli.

Mr. Joseph Bucklin Bishop, accompanied by his wife, son, and daughter, returned from his annual leave on the *Ancon*, which docked at Cristobal on Tuesday, July 29.

Congressmen Lincoln Dixon of Indiana, accompanied by his son, and Alfred G. Allen of Ohio, accompanied by Mrs. Allen, have been viewing the Canal, arriving on the *Colon* on Thursday, July 24.

Justice W. H. Jackson, accompanied by his family, returned from his annual leave, on the *Metapan*, on Wednesday, July 23.

Progress on Permanent Shops.

During the past week the forces of the United States Steel Products Company at Balboa have been placing the roof trusses for the permanent machine shop, building No. 1, in addition to driving the finishing rivets for the framework of the planing mill and the foundry. At the pattern storage building, steel erection is temporarily at a halt, while forces of the Commission are laying the reinforced concrete ground floor. The main columns for the steel shed, building No. 3, adjoining the machine shop, have been erected and roofwork will follow the completion of that for the machine shop. The steel for the general storehouse, the largest of the buildings, with a floor space of 96,000 square feet, has arrived on the Isthmus, and tracks have been laid to the site, so that erection can begin as soon as forces and equipment can be spared from the work now under way. Forces of the Second Division are completing the foundation of this building by the construction of heavy longitudinal and transverse beams of reinforced concrete, resting on the clusters of piles, which are capped with concrete blocks.

The installation of machinery in the planing mill, moved from Gorgona shops, continues; the traveling planer, the circular cross-cutting and rip saws, and several shapers have been in service for the past week. These machines are belt-driven, from motors set on temporary wooden bases; most of them will be direct-connected to new motors, set on adjacent concrete bases. The motors are ordered from the United States, and delivery is expected within a few weeks.

Obituary.

Robert Moody Patterson, a white American, at one time employed by the Mechanical Division under the alias of John Patterson, died at Ancon Hospital on Monday, July 21. He was 41 years of age, unmarried, and had been on the Isthmus since August 31, 1911, coming here from Guatemala. His nephew, Walter Patterson, resides at No. 1474 Washington street, Roxbury, Mass.

The death of Roland Lord, an Englishman, nonemployee, who has been on the Isthmus for the past 18 months, coming here from Valparaiso, Chile, occurred at Ancon Hospital on Wednesday, July 23. He was about 50 years of age, and was married.

SOCIAL LIFE OF THE ZONE.

Church Notes.

The Woman's Auxiliary to the Gatun Christian League completed six months of activity on July 16. At a meeting held on Thursday, July 18, there was an election of officers, the following being chosen; President, Mrs. G. Borse; vice-president, Mrs. Gilbert; secretary, Mrs. E. J. Feild, reelected; devotional leader, Mrs. Annie Hill, reelected. A review of the work of the league, which was organized on January 16, shows that there has been a steady increase in membership, and that the organization has been of assistance to the Christian League in contributing to the chapel improvements, and caring for the preparation of the chapel for the Sunday services. By various means, the league has raised \$109.75; over \$40 of this money has been spent in the chapel. The league meets in the chapel on the first and third Thursdays in each month.

The Rev. H. R. Carson, chaplain of Ancon Hospital and rector of St. Luke's hospital chapel, has been granted an extension of leave, and is due to arrive on the Isthmus on Monday, August 4. Regular services at St. Luke's chapel will be resumed on the Sunday following, August 10. The Sunday school will continue as usual every Sunday at 9 o'clock. Notice of the resumption of services at St. Mary's church, Empire, and the monthly celebration of the Holy Communion at Culebra will be given in THE CANAL RECORD.

Some of the young people of Empire have organized a Christian Endeavor Society, and will hold meetings at the chapel on Sunday mornings in place of those held hitherto under the Christian League chaplain, the Rev. A. A. Nellis. A meeting was held in the chapel on Sunday morning, July 20, under the temporary chairmanship of Mr. Robert Browning, and the permanent organization was effected on Tuesday evening, July 22. The following officers were chosen: President, Mr. Warren H. Barrett; vice-president, Miss Mary A. Smith; secretary, Mrs. Frank Peck; treasurer, Mr. David Johnson. The present enrollment is 16. The executive committee is planning to hold an informal reception in the first week in August.

The rite of confirmation will be administered at St. Ferdinand's Roman Catholic Church, Empire, on Sunday, August 17. The third in the series of monthly euchre parties under the auspices of the Altar Society will be held in the parish house on Saturday evening, August 9.

Isthmian Sunday Schools.

The quarterly meeting of the Isthmian Sunday School Association was held at the Commission chapel at Empire on Sunday afternoon, July 13. There were present, besides a number of visitors, representatives from the federated Sunday schools in the Canal Zone, as follows: Panama, Methodist Episcopal, six; East Balboa, one; Corozal, four; Pedro Miguel, six; Paraiso, two; Culebra, 10; Empire, 42; Las Cascadas, six; Cristobal, six; Porto Bello, one. The reports indicated a good Sunday school spirit, and in spite of the removals of families from one village to another, the enthusiasm and activity of the superintendents and directors of the schools enable them to keep the work up to a high standard.

The schools at Gorgona and Bas Obispo have been abandoned, but there has been a

subsequent increase in the enrollment of the schools at Balboa, Empire, Cristobal, and Corozal.

The convention was opened with congregational singing, followed by devotional exercises, after which routine business was taken up. The musical features of the program were: Solo, by Mr. W. E. Hoffman, a vocal duet by Mr. and Mrs. George R. D. Kramer, and a selection by the Sunday school quartet of the Panama school. The organ, which was returned to the association on the closing of the Sunday school at old Balboa, was reported to be in use by the primary room of the Cristobal school, which hold its sessions in a room in the courthouse. The president announced that the petition of the association for a building for Union Sunday school uses in the permanent village of Balboa has been favorably received, and further, that he has had the assurance that a playground for the children of the village will be provided.

Mr. Page, superintendent of the Sunday school at Porto Bello, made an address on "Discipline, and the power of example." In his address, on "Coming and going," Mr. Kromer of Cristobal, made several practical suggestions in regard to the grading of the pupils transferred to the schools from other villages; of constant care in looking out for these children; in advertising, and in keeping a record of the class work and attendance of each pupil.

Mr. J. M. Weaver on behalf of the association read a letter expressing the good wishes of the members to their president, the Rev. A. A. Nellis, who has left the Isthmus. Mr. Nellis had been at the head of the association since his arrival on the Isthmus in 1910.

The statistics for the past quarter are, as follows:

Cristobal—Enrollment, 294; children, 183, adults, 41; cradle roll, 70; average attendance, 158. Graded lessons are used. A contribution of \$5 is sent monthly to foreign missions.

Gatun—Average attendance, 70. The school reported three classes perfect in attendance for the quarter.

Las Cascadas—Enrollment, 85; children, 60, adults, 25; average attendance, 64.

Empire—Enrollment, 238; children, 182, adults, 56; cradle roll, 20; average attendance, estimated at 130, but the figures are not certified. International graded lessons are used. The school has contributed \$100 to the Christian league during the quarter. The men's Bible class, recently instituted, has a healthy membership.

Culebra—Enrollment, 85; adults, 20; average attendance, 64; home department, 15; cradle roll, 30. International graded lessons are used. The increase in the average attendance for the past three years has been, as follows: 1910, sixty-six; 1911, sixty-two; 1912, sixty-one.

Paraiso—Enrollment, 43; adults, 22; average attendance, 30.

Pedro Miguel—Enrollment, 30; adults, 10; average attendance, 26.

Panama—Enrollment, 60; adults, 15; average attendance, 49; men's Bible class, 18.

East Balboa—Enrollment, 14; adults, two; cradle roll, two; average attendance, 11.

Corozal—Enrollment, 55; average attendance, 46.

Porto Bello—Enrollment, 36; children, 28, adults, 8; average attendance, 33.

The annual election of officers resulted, as follows: President, J. M. Weaver, Cristobal;

vice-president, J. F. Warner, Culebra; secretary, W. H. Kromer, Cristobal; treasurer, W. E. Hoffman, Empire.

Ancon Study Club to Revise Library System

The Ancon Study Club has arranged for a revision of its library system, and the meeting on Thursday, July 31, will be devoted to the explanation of the system to be adopted, and a preliminary classification of the books. At the meeting, the reading of papers on current events will be resumed. The fourth volume in the study of American history was completed at the reading on July 24.

Playground for Seawall Methodist Church.

The members of the Woman's Foreign Missionary Society of the Methodist Episcopal Church, Panama, are making arrangements to place swings and exercising bars in the school yard of the mission school on the seawall. The only playground for the children of the school at present is the small patio in the rear of the church building, therefore, the installation of suitable playground equipment will be welcome.

Magazines for Canal Zone Penitentiary.

Back numbers of magazines, or whole volumes in good condition, would be appreciated at the Canal Zone penitentiary. The district quartermaster at any station will take charge of the forwarding of such magazines as may be sent for this purpose without charge to the sender.

Grand Consistory of Louisiana.

The Grand Consistory of Louisiana will confer the degrees from the fourth to the thirty-second, inclusive, at Ancon Hall, on Friday night, August 1, at 7.30 p. m. Work will be continuous during Saturday and Saturday night, and Sunday and Sunday night. Applicants are requested to take notice.

W. EDGAR PARKER, 32d°

S. H. MARCUSE, 32d°

Representing the Grand Master of Kadosh for the State of Louisiana.

Programs for Souvenirs.

Any person desiring extra copies of the Fourth of July programs as souvenirs can procure same by addressing Printing Plant, Mount Hope depot, Cristobal, C. Z.

Knights of Pythias.

Lock City Lodge, No. 5, Knights of Pythias, will hold a dance at the Gatun clubhouse on August 9. Music will be furnished by an orchestra from the Tenth Infantry. An admission charge has been fixed to defray expenses.

Missing Man.

Any one having information as to the whereabouts of Joseph P. McGiff, a former employe on the Isthmus of the American Bridge Company, is requested to notify the office of the Chairman, Culebra.

In a note in THE CANAL RECORD of last week on the decrease of the West Indian labor force, it was stated, "The contract laborers will be repatriated on request." The employment contract stipulates that return transportation will be furnished only to those who have worked at least 500 days.

AUTOMOBILE TARIFF.

Schedule of Rates for Transporting Passengers Over Canal Zone Streets and Roads.

ANCON, C. Z., July 10, 1913.

Under the authority vested in me by the Ordinance enacted by the Isthmian Canal Commission on August 25, 1910, and approved by the Secretary of War on December 3, 1910, I hereby prescribe the following rates for the transportation of passengers by automobile or other motor vehicle of similar construction over the streets and roads of the Canal Zone.

Any person who shall charge any amount in excess of the rates herein prescribed, or any person who shall fail or refuse to pay the duly prescribed rate for transportation shall be punished by a fine not to exceed twenty five dollars (\$25). (Sections 4 and 5 of Ordinance No. 21.)

A rate different from that herein prescribed may, however, be made and charged, if the parties to the transaction agree thereon. In case of any dispute, the duly prescribed rate shall prevail.

Section 6 of Ordinance No. 19 requires that all motor vehicles shall, when being operated on any of the Canal Zone streets or roads, between the hours of 6 p. m. and 5 a. m., carry and prominently display lights, as follows: Automobiles, or motor vehicles of similar construction, two bright front or headlights, one on either side, and one red light at the rear.

This tariff of rates is made reciprocal between points in the Canal Zone and the city of Panama by a Resolution adopted by the Municipal Council of Panama on April 28, 1913, and becomes effective in the Canal Zone following its publication in two consecutive issues of THE CANAL RECORD.

GEO. W. GOETHALS, Chairman,
In charge of Department of Civil Administration.

Automobile Tariff Between Points in the Canal Zone and the City of Panama.

RATES BY THE HOUR.

(All rates in United States Currency.)

Capacity of car.*	For first hour.	For each hour thereafter.
5 passengers.....	\$5.00	\$4.00
6 passengers.....	6.00	5.00
7 passengers.....	7.00	6.00

*Five, six, and seven-passenger cars are those having a normal seating capacity for five, six, and seven passengers, respectively, including the chauffeur.

For cars having a seating capacity less than that above indicated the rates are not to exceed \$1 U. S. currency per hour for each person for which the car has a normal seating capacity, including the chauffeur.

For any car having a normal seating capacity of more than seven passengers, the charge shall be computed for the first hour at the rate of \$1, U. S. currency, for each person for which such car has a normal seating capacity, including the chauffeur, and for each hour thereafter \$1 less than the first hour rate for the car.

COMPUTATION OF TIME.

Time lost in breakdowns, the making of repairs and other stops for which passengers are not responsible, shall not be charged against passengers.

Where cars are ordered from garages in the cities of Panama and Ancon for service to begin in said cities, the time upon which the hourly rate shall be computed shall begin when the car leaves the point where it is boarded by the passenger or passengers, and the time shall be deemed to end when the car returns to such point of original departure or any other point designated by the passenger or passengers, except where cars are ordered to be at a designated place at a certain time, in which case the time shall start from such specified hour.

Where cars are ordered from garages in the cities of Panama and Ancon for use outside of said cities, time for which charge may be made at the hourly rate shall begin when the car leaves the garage.

For fractional parts of an hour the proportionate part of the hourly rate will be charged.

Whenever any car is employed at the hourly rate and the passengers leave the car at some point or points other than the place of departure, the time which should be consumed by the car in returning direct to the place of departure, or to such other point as may be agreed on, shall be included in the time to be charged for.

RATES BETWEEN LOCAL POINTS.

Where automobiles engage in the business of carrying one or more passengers between the points shown in the following table, and such automobiles are not hired upon an hourly basis, the charges for transportation furnished between such points shall not be in excess of those hereinafter prescribed.

PANAMA—ANCON—BALBOA.

Between any point in	And	United States currency
Ancon or Panama	Any other point in Ancon (outside of hospital reservation) or Panama. One way—For each person....	\$0 50
Ancon or Panama	Balboa Docks and return: 5-passenger car.....	3.50
	7-passenger car.....	5.00
	No reduction for one way.	
Ancon or Panama	Old Panama and return: 5-passenger car.....	5.00
	7-passenger car.....	7.00

NOTE.—The rate to Old Panama and return is that above shown, provided the time consumed does not exceed one (1) hour, in which case the charge shall be computed upon the hourly basis.

Canal Zone Automobile Tariff.

LOCAL POINT RATES FOR CULEBRA, EMPIRE, AND LAS CASCADAS.

Between	And any point in	U. S. currency. One way.
Culebra (Administration building and environs).	Empire.....	For each passenger. .75
Culebra, (Railroad station)...	Empire.....	.50
Empire.....	Las Cascadas.....	.50

NOTE.—The rates by the hour, as well as the rules governing the computation of time, shall be the same as those prescribed in the Automobile Tariff between points in the Canal Zone and the city of Panama.

Approved:

GEO. W. GOETHALS, Chairman,
In charge of Department of Civil Administration.

ANCON, C. Z., July 10, 1913.

Under the authority vested in me by the Ordinance enacted by the Isthmian Canal Commission on August 25, 1910, and approved by the Secretary of War on December 3, 1910, I hereby prescribe the following rates for the transportation of passengers by automobile or other motor vehicle of similar construction over the streets and roads of the Canal Zone.

Any person who shall charge any amount in excess of the rates herein prescribed, or any person who shall fail or refuse to pay the duly prescribed rate for transportation received, is guilty of a misdemeanor, and upon conviction shall be punished by a fine not to exceed twenty-five dollars (\$25). (Sections 4 and 5 of Ordinance No. 21.)

A rate different from that herein prescribed may, however, be made and charged, if the parties to the transaction agree thereon. In case of any dispute, the duly prescribed rate shall prevail.

Section 6 of Ordinance No. 19 requires that all motor vehicles shall, when being operated on any of the Canal Zone streets or roads, between the hours of 6 p. m. and 5 a. m., carry and prominently display lights, as follows: Automobiles, or motor vehicles of similar construction, two bright front or headlights, one on either side and one red light at the rear.

This tariff of rates is made reciprocal between points in the Canal Zone and the city of Colon by Ordinance No. 25, enacted by the Municipal Council of Colon on June 27, 1913, and becomes effective in the Canal Zone after publication in two consecutive issues of THE CANAL RECORD.

GEO. W. GOETHALS, Chairman,
In charge of Department of Civil Administration.

Automobile Tariff Between Points in the Canal Zone and the City of Colon.

RATES BY THE HOUR.

(All rates in United States Currency.)

Capacity of car.*	For first hour.	For each hour thereafter.
5 passengers.....	\$5.00	\$4.00
6 passengers.....	6.00	5.00
7 passengers.....	7.00	6.00

*Five, six, and seven-passenger cars are those having a normal seating capacity for five, six, and seven passengers, respectively, including the chauffeur.

For cars having a seating capacity less than that above indicated the rates are not to exceed \$1 U. S. Currency, per hour for each person for which the car has a normal seating capacity, including the chauffeur.

For any car having a normal seating capacity of more than seven passengers, the charge shall be computed

for the first hour at the rate of \$1 U. S. Currency, for each person for which such car has a normal seating capacity, including the chauffeur, and for each hour thereafter \$1 U. S. Currency, less than the first hour rate for the car.

COMPUTATION OF TIME

Time lost in breakdowns, the making of repairs and other stops for which passengers are not responsible, shall not be charged against passengers.

Where cars are ordered from garages in the cities of Colon and Cristobal for service to begin in said cities, the time upon which the hourly rate shall be computed shall begin when the car leaves the point where it is boarded by passenger or passengers, and the time shall be deemed to end when the car returns to such point of original departure or any other point designated by the passenger or passengers, except where cars are ordered to be at a designated place at a certain time, in which case the time shall start from such specified hour.

Where cars are ordered from garages in the cities of Colon and Cristobal for use outside of said cities, the time for which charge may be made at the hourly rate shall begin when the car leaves the garage.

For fractional parts of an hour the proportionate part of the hourly rate will be charged.

Whenever any car is employed at the hourly rate and the passengers leave the car at some point or points other than the place of departure, the time which should be consumed by the car in returning direct to the place of departure, or to such other point as may be agreed upon, shall be included in the time to be charged for.

RATES BETWEEN LOCAL POINTS.

Where automobiles engage in the business of carrying one or more passengers between the points shown in the following tables, and such automobiles are not hired upon an hourly basis, the charges for transportation furnished between such points shall not be in excess of those hereinafter prescribed.

CRISTOBAL—COLON—GATUN.

Between any point in	And	United States currency.
Cristobal or Colon.	Any other point in Colon or Cristobal. One way—For each passenger.....	\$0.50
Cristobal or Colon	Gatun and return* 5-passenger car.....	\$6.00
	7-passenger car.....	8.00
	No reduction for one way.	

*With privilege of 5-minute stop for benefit of passengers.

Sale of Brass Borings.

MOUNT HOPE, C. Z., July 28, 1913.

Sealed bids will be received at the office of the Depot Quartermaster, Mount Hope, until 3 p. m., August 8, 1913, when they will be opened in the presence of attending bidders, for approximately 49,200 pounds of brass borings now stored at this depot. Borings will be delivered f. o. b. docks Colon or Panama in present containers. This material may be seen on any working day between the hours of 7 and 11 a. m., and 1 and 5 p. m. The right is reserved to reject any or all bids. Bids must be plainly marked "Proposal for purchase of brass borings, to be opened August 8, 1913," and addressed to

C. NIXON,
Depot Quartermaster.

Sale of Towboat "Exotic."

OFFICE OF DEPOT QUARTERMASTER.

MOUNT HOPE, C. Z., June 21, 1913.

Sealed bids will be received at this office until 2 p. m., Tuesday, September 2, 1913, for the steel-hull, stern-wheel towboat *Exotic*, built for the Commission in 1908 by Pusey and Jones, Wilmington, Del., at an approximate cost of \$40,000.

Gross tonnage, 150; two tandem compound engines, 7-inch by 14-inch, 48-inch stroke; two horizontal tubular boilers, Mississippi River type, 44-inches by 190-inches; indicated horsepower, 70; equipped with boiler feed pumps; boat equipped with capstan, steam steering gear, etc.; retired from service in 1911.

This boat can be inspected and further particulars obtained on any working day between 7 and 11 a. m., and 1 and 5 p. m., upon application at this office; any further information desired by intending bidders at a distance will be furnished by letter on request. Right is reserved to reject any or all bids.

Bids should be addressed to the Depot Quartermaster, Mount Hope, Canal Zone, plainly marked, "Proposal to purchase towboat *Exotic*, to be opened September 2, 1913."

C. NIXON,
Depot Quartermaster.

OFFICIAL CIRCULARS.

Appointment of Disbursing Officer.

CULEBRA, C. Z., July 24, 1913.

CIRCULAR No. 491:

Mr. John H. McLean is hereby appointed Disbursing Officer of the Isthmian Canal Commission, effective August 1, 1913, vice Mr. Edward J. Williams, resigned. The cash, books, and other property in charge of the Disbursing Officer will be turned over to Mr. McLean on that date.

In order that Mr. Williams may be given time to settle his accounts, his resignation will become effective at the close of business on August 15, 1913.

GEO. W. GOETHALS.
Chairman and Chief Engineer.

Appointments in Mechanical Division.

CULEBRA, C. Z., July 19, 1913.

CIRCULAR No. 183-X.

Mr. J. J. Eason is hereby appointed assistant superintendent of the Mechanical Division, effective July 21, 1913, and will report for duty to the inspector of shops.

Mr. C. W. Fisher, Jr., Naval Constructor, United States Navy, is appointed superintendent of erection in the Mechanical Division, effective July 19, 1913, and will report for duty to the assistant superintendent thereof.

GEO. W. GOETHALS.
Chairman and Chief Engineer.

Silver Employees' Service Slips.

CULEBRA, C. Z., July 23, 1913.

CIRCULAR No. 229-Z-3.

In the future, in every case where a silver employee above the 10-cent grade voluntarily quits, silver employees' service slip (C. E. 262-2) must show whether the employee quit with or without the permission of his superior. If the employee quits with the permission of his superior, and the service slip so states, he may be reemployed at the same rating received under the previous employment. If he quits without permission, he must be reemployed at a lower rating and serve at least three months before being promoted to a higher grade.

GEO. W. GOETHALS.
Chairman and Chief Engineer.

No Reduction on Children's Half-Rate Tickets on United Fruit Company's Ships.

CULEBRA, C. Z., July 11, 1913.

CIRCULAR No. 175-N.

The local agent of the United Fruit Company advises that, effective July 12, 1913, no reduction will be made on half-rate tickets issued to the children of employees of the Isthmian Canal Commission, and that thereafter the reduced rate will apply to adults only.

GEO. W. GOETHALS.
Chairman and Chief Engineer.

Invoicing of Accrued Vacation Leave.

CULEBRA, C. Z., July 26, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS.

When an employee is transferred from one department or division to another, the department or division transferring the employee will be invoiced by the department or division requesting the transfer with the amount of accrued vacation leave due the employee. This information will be obtained from the transfer slip furnished at the time of transfer. Bills should be rendered monthly covering all transfers during the month.

This method is effective on and after July 1, 1913, and cancels the existing order, which requires that accumulated leave be assumed by the department or division to which an employee is transferred.

GEO. W. GOETHALS.
Chairman and Chief Engineer.

Appointment of Chief Dispatcher, P. R. R.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT.
COLON, R. P., July 28, 1913.

CIRCULAR No. 242;

All concerned—Effective August 1, 1913, Mr. C. W. Northrop is appointed chief dispatcher of the Panama railroad.

JOHN D. PATTERSON.
General Superintendent.

Cash Sales of Commissary and Hotel Books.

CRISTOBAL, C. Z., July 28, 1913.

Effective August 1, the sale of commissary and hotel books for cash will be discontinued in the commissary stores at Gatun, Bas Obispo, Las Cascadas, Empire, Culebra, and Corozal, and will be taken over by the

station agents at these points. Books will be sold daily during the hours the stations are open for business.

Approved: EUGENE T. WILSON,
GEO. W. GOETHALS, Subsisistence Officer.
Chairman and Chief Engineer.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission and Panama Railroad Company, arrived at the ports of Cristobal and Colon during the two weeks ending July 26:

Carrillo, July 13, from New York, with 570 pieces steel ties, 45 bundles splice bars, 21 kegs bolts and clips, for Second Division; 34 cases electrical material, for First Division; 87 kegs rivets, 304 pieces structural steel, for Panama Railroad Company; 1,084 sacks oats, 100 bundles scoop shovels, for stock.

Parissima, July 15, from New Orleans, with 113 packages castings, 679 pieces white oak lumber, for Mechanical Division; 523 barrels paving brick, 297 pieces cross-ties, for Panama Railroad Company; 150 sacks feed, 549 pieces cross-ties, 80 pieces lumber, 64 pieces piling, 513 bales prairie hay, for stock.

Cristobal, July 14, from New York, with 81,433 sacks cement, 487 pieces structural steel, 190 kegs rivets, 70 cases rivets, for stock; 475 pieces boiler tubes, for Sixth Division; 158 bundles steel bars, for fortifications; 100 pieces steel plates, 33 kegs bolts and rivets for Second Division; and a miscellaneous cargo, the whole consisting of 83,241 packages, weighing 4,400 tons.

Panama, July 14, from New York, with 15 barrels muralie, 49 cases drift bolts, for Atlantic Division; 90 bundles steel bars, 107 pieces steel plates, for Second Division; 111 cases drift bolts, for Fifth Division, 10 pieces car castings, 102 cases car castings, 15 cases insulating tape, 19 coils copper wire, 11 cases shades, for Mechanical Division; 10 cases electrical machinery, 11 reels copper wire, 1,200 pieces structural steel, for First Division; 156 pieces structural steel, 404 bundles galvanized pipe, 39 barrels coal tar, 80 cases lye, 12 casks glassware, 63 cases hexagonal nuts, 50 bundles sheet iron, 2,072 kegs wire nails, for stock; and a miscellaneous cargo, the whole consisting of 5,200 packages, weighing 550 tons.

Santa Maria, July 16, from New York, with 27 pieces steel columns, for Panama Railroad Company; 55 bundles steel bars, for fortifications; 173 kegs bolts and nuts, 14 cases boiler lagging, 15 packages hardware, for stock.

Nicosian, July 17, from Liverpool, with 76 pieces bucket links, five pieces dredge buckets, for Sixth Division; 50 pieces dipper teeth, for stock.

Turrialba, July 17, from New Orleans, with 120 barrels paving brick, for Panama Railroad Company; 117 pieces lumber, for Mechanical Division; 53 pieces piling, 843 pieces cross-ties, 1,435 pieces pipe and fittings, 105 cases paint, 1,845 pieces lumber, for stock.

Allianca, July 20, from New York, with 277 pieces car castings, 7 barrels car castings, 150 barrels sand, 18 cases paint, 41 reels copper wire, 9 barrels batteries, for Mechanical Division; 16 cases linoleum, for Sanitary Department; 445 pigs lead, 20 barrels molasses, 10 barrels asphalt, 100 cases Sapolio, 22 cases copper tacks, 45 bales rubber hose, 20 barrels lubricant, 25 cases lamp chimneys, 46 pieces I-beams, 32 packages pipe-fittings, 34 bundles shovels, 1,440 pieces bar iron, for stock; and a miscellaneous cargo, the whole consisting of 2,900 packages, weighing 185 tons.

Pastores, July 20, from New York, with 24 reels electric cable, 23 cases electric machinery, for First Division; 17 pieces steel columns, for Panama Railroad Company; 225 cases bolts, 58 sacks tie plugs, 50 cases varnish, 25 cases rubber hose, for stock.

Hafnia, July 21, from Thompson's Point, N. J., with 12,000 cases dynamite, for stock.

Carl Schurz, July 21, from New York, with 12 cases machinery, for First Division; 12 cases paper, 10 cases pipe-fittings, 1,060 pieces wrought pipe, for stock.

Catago, July 21, from New Orleans, with 781 barrels paving bricks, 210 pieces switch ties, for Panama Railroad Company; 451 pieces car lumber, for Mechanical Division; 46 pieces piling, 320 bales prairie hay, 372 pieces white oak lumber, 6 cases castings, 432 pieces switch ties, 12,000 pieces yellow pine lumber, for stock.

Metapin, July 23, from New York, with 31 reels electric cable, 1,200 pieces anchor bolts, for First Division; 10 cases insulating compound, for Mechanical Division; 5,000 pieces hollow tile, for Second Division; 9 cases packing, 10 cases copper, 31 barrels rosin, for stock.

Abanquez, July 25, from New Orleans, with 5 cases insulating compound, for Mechanical Division; 237 pieces switch ties, for Panama Railroad Company; 548 pieces yellow pine lumber, for Mechanical Division; 420 pieces lumber, for stock.

Montoso, July 25, from Baltimore, with 2,734 pieces sewer pipe, for stock; 1,316 pieces sewer pipe, for Fortifications; 1,236 pieces steel plates, for Second

Division; 16 pieces castings, for First Division; 432 tons structural steel, for Second Division.

Colon, July 25, from New York, with 26 cases machinery, for Atlantic Division; 42 crates asbestos roofing, for fortifications; 2,703 bags sand, 225 barrels clay, 18 barrels car castings, 331 pieces car castings, 12 pieces steel bars, for Mechanical Division, 13 casks crockery, 40 crates handles, 17 crates reed furniture 150 cases paint, 48 cases picks, 20 cases sal soda, 204 kegs bolts and rivets, 16 crates closet seats, 39 reels wire rope, 950 pieces structural steel, 21 bales oakum, 125 cases bronze wire cloth, 220 drums lubricating oil, 40 cases soap, for stock; 300 bundles galvanized iron conduit, for Mechanical Division; 228 pieces channels, 195 pieces plates and bars, for Second Division; 50 cases electrical machinery, for First Division; and a miscellaneous cargo, the whole consisting of 6,385 packages, weighing 660 tons.

Rainfall from July 1 to July 26, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
	Inch.		Inch.
<i>Pacific Section—</i>			
Ancon.....	1.15	20	4.06
Balboa.....	1.08	20	3.50
*Miraflores.....	.55	19	3.90
Pedro Miguel.....	1.40	19	6.00
Rio Grande.....	1.10	7	5.22
<i>Central Section—</i>			
Culebra.....	1.99	7	4.95
*Camacho.....	.79	7	3.73
Empire.....	.97	19	4.33
Gambou.....	1.56	4	7.17
*Juan Mina.....	1.19	23	5.98
Alhajuela.....	1.65	23	5.31
*El Vigia.....	1.40	23	5.63
*Gorgona.....	1.31	19	5.40
*Frijoles.....	1.39	4	5.10
*Trinidad.....	2.26	1	7.16
*Monte Lirio.....	1.70	1	6.57
<i>Atlantic Section—</i>			
Gatun.....	3.04	1	8.09
*Brazos Brook.....	1.24	16	7.94
Colon.....	2.42	9	10.81
†Porto Bello.....	3.30	7	13.55

*Standard rain gage—readings at 5 p. m. daily; automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., July 25.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, July 26, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela	Gambou.	Gatun Lake.
Sun., July 20.....	125.9	92.4	52.9	52.8
Mon., July 21.....	125.8	92.2	52.9	52.9
Tues., July 22.....	127.2	93.4	53.0	53.0
Wed., July 23.....	126.5	93.2	53.2	53.1
Thurs., July 24.....	126.2	92.6	53.3	53.2
Fri., July 25.....	144.2	98.0	54.0	53.3
Sat., July 26.....	128.1	94.4	53.5	53.4

Height of low water to nearest foot.....

*Sluice gates in spillway were closed on June 27, 1913, with lake at elevation 48.25.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending August 9, 1913:

DATE.	Low		High		Low
	A.M.	P.M.	A.M.	P.M.	P.M.
Aug. 3.....	4.00	10.12	4.15	10.35	
Aug. 4.....	4.45	11.00	5.07	11.21	
Aug. 5.....	5.30	11.45	5.50		
Aug. 6.....	12.07	6.15	12.32	6.35	
Aug. 7.....	1.53	7.00	1.20	7.22	
Aug. 8.....	1.40	7.48	2.10	8.13	
Aug. 9.....	2.32	8.39	3.06	9.10	

75th meridian time.

Auction of Hogs at Ancon Hospital Dairy.

ANCON, C. Z., July 23, 1913.

There will be sold at public auction at the Ancon Hospital dairy, Saturday morning August 23, at 10 o'clock, five hogs (barrows) for butchering.

The right to reject any and all bids is reserved.

CHAS. F. MASON,
Superintendent.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The moving picture schedule for the week August 4 to 9 is, as follows: Monday, Empire; Tuesday, Culebra; Wednesday, Cristobal; Thursday, Gatun; Friday, Porto Bello; Saturday, Corozal.

COROZAL.

Moving pictures will be Friday night this week.

A handicap tenpin bowling tournament will be started August 1. Prizes will also be given for high score and for high average during the month.

The highest scores for the week ending July 26 were, as follows:

Tenpins—Bordt, 202, 202, 211; Beall, 207, 208; Emerson, 202; Start, 212; Whiston, 214.

Duckpins—Ryan, 103; Beall, 103.

The Spanish class for boys was started Friday afternoon by Señor Gabino Arandilla A., with four boys present. The class will meet Monday, Wednesday, and Friday afternoons at 3.30 p. m. More scholars will probably join the next class.

The chess club has just completed a preliminary tournament which resulted, as follows:

	Won.	Lost.
Morehead	9½	2½
Sherrard	9	3
Mills	6	6
Garrell	6	6
Fields	5½	6½
Kingsbury	4	8
Kyte	2	10

The championship chess tournament will begin August 1, and end on or before September 15. An entrance fee of \$1 is required of each contestant. The following prizes will be given: First place, medal; second place, chess board and chess men; third place, chess men.

The chess match held on July 19 between Corozal and Culebra resulted, as follows:

Corozal.	Won.	Culebra.	Won.
Connor	2	DuBois	0
Gartrell	2	McClure	0
Hall	2	Hall	0
Sherrard	1	Warner	1
Mills	1	Wilson	1
Morehead	1	Warner	1
Fields	1	Strong	1
Kyte	1	Shropshire	1
Total	11		5

CULEBRA.

The Sunday evening song service was well attended. The program for next Sunday will be announced by bulletin. These services will be held every Sunday evening at 7.30, and a general invitation is extended.

EMPIRE.

In the handball tournament just closed Mr. DeCora won all 13 games. There were 12 men in the tournament.

The gymnasium classes meet twice weekly; a few minutes are spent each night in first aid instructions. All are invited to join the gymnasium activities.

The local ragtime tenpin tournament will close the first of August. All games must be bowled by that date.

All Gorgona men holding membership tickets in the Gorgona Y. M. C. A. are requested to transfer them to the Empire association, providing they hold quarters in Empire.

GORGONA.

The farewell reunion, held on Friday evening, July 25, was attended by the largest number of people ever assembled in the Commission clubhouse. A special train brought many of the old residents of Gorgona from Balboa, Ancon, Corozal, and other villages to which they have been transferred. The entire building was decorated with bunting and palms, and during the evening the Marine band from Camp Elliott played. A program, which had been arranged by the local secretary, included the following numbers: Contralto solo, Mrs. Adolf Faure of Culebra, tenor solo, Mr. W. G. Ross of Empire, Mr. A. B. Dickson, accompanying; piano solo, Mr. C. C. Pearsall of Empire; song and dance by Mr. R. F. J. Cogan; sketch entitled "Three Barbadians," by Messrs. Burmaster, Otis, and Morrison; sketch entitled "Fifteen minutes in China," by Messrs. Aaron and Homer of Gatun. Speeches were made by Mr. W. F. Morrison, Mr. F. G. Swanson, and Secretary George K. R. Kramer. During the informal reception that followed, refreshments were served. Mr. LeRoy Smith, chairman of the executive council of the clubhouse, was chairman of the meeting.

Only 97 people attended the motion picture show on Wednesday evening, but this meant that almost every American, young or old, in town was present. The last

picture entertainment at the clubhouse was held on Monday evening, July 28.

The clubhouse activities are greater at the noon hour than at any other time during the day when all the old Gorgonites come to the building.

If there are any members of the Gorgona association that still have in their possession books belonging to the clubhouse library, the secretary requests that they be turned in at once.

The pool room activities are kept up as usual, but the bowling alleys have not been used very much during the last few weeks, as nearly all the members that were interested in bowling have moved away.

GATUN.

Bowling continues to be the busiest activity at the clubhouse. An average of 175 games a day was bowled during the past week. The standing of the "Lock City" duckpin tournament on Saturday evening, July 26 was, as follows:

Team.	Won.	Lost.	P. C.
McClintic-Marshall Con. Co.			
Field	6	3	.666
McClintic-Marshall Con. Co.			
Office	8	4	.666
First Division	6	3	.666
Atlantic Division	6	3	.666
Lock gate inspectors	3	9	.250
American Bitumastic Enamel Company	1	8	.111

The ten men who stand highest in average so far are, as follows:

Name.	P. C.	Name.	P. C.
Wurster	92.2	Grover	89.7
Wells	92.2	Bellinger	88.6
Barte	91.2	Furlong	87.9
Hodges	91.1	Humphreys	87.5
Claherty	90.6	Madder	87.5

S. M. Bellinger's score of 132 pins is high single game so far in the tournament. It has been decided to award medals to the teams, as follows: First prize, gold medals; second prize, silver medals; third prize, bronze medals. Silver medals will be given to the men having high average and high single game.

Three hundred and twenty-five people attended the motion pictures illustrating the Life of Christ, which were shown on Saturday night, July 26. Mrs. Shivers of Empire played appropriate piano music.

Twenty-five of the latest books of fiction have been ordered from the States.

Several interesting features have already been procured for the "Smoker," which will be held the latter part of August.

Basketball practice has been started at the Gatun clubhouse. Ten men were present on Thursday evening, July 10.

CRISTOBAL.

A number of chess players met on Monday night and organized a local chess club. Mr. D. Wilson was elected president, and Mr. C. L. Salzberg, secretary.

The set of films depicting scenes in the Life of Christ entitled, "From the Manger to the Cross," were shown on Sunday night, July 27. The Union Church united with the Y. M. C. A., and the attendance was 350. Music was furnished by Mr. C. C. Pearsall.

Mr. Wm. E. Burrell, who has been connected with the Cristobal Y. M. C. A. since May, 1910, first, as physical director for two years, and afterwards secretary for one year, sails for the United States on Thursday, July 31. Mr. Joseph Page, formerly of Porto Bello, succeeds Mr. Burrell as secretary.

PORTO BELLO.

The attendance at the moving picture entertainments has about doubled during the past ten months.

Rev. Mr. Sobey of New York preached on Sunday night, July 13. Mrs. Cecil Wilkes sang "Only a beam of sunshine."

The moon and an immense bonfire were the illuminations for the second after-dark swim, which was given on July 17. The ladies served coffee and home made cake to over 50 participants.

Mr. and Mrs. Geo. R. D. Kramer, Jr., Mr. and Mrs. Cogan of Gorgona, and Mrs. Fitzpatrick of Corozal gave an entertainment on Saturday night, July 19. Mr. and Mrs. Kramer sang a number of solos. Mr. Kramer gave a bar exhibition, also with Indian clubs. Mr. Cogan sang a number of popular songs. Mrs. Fitzpatrick was the accompanist for the evening, and in addition played two piano solos. Refreshments were served.

On request, the Children's Day entertainment was repeated Sunday night, July 20.

At the conclusion of the moving picture entertainment on Friday night, July 25, a Howard watch and watch fob of Canal stones was presented by the members to Mr. J. A. Page, the retiring secretary, who left to assume charge of the Cristobal clubhouse. Mr. Ad. Hoehne made the presentation speech.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Advance	P. R. R.	Saturday	July 26
Panama	P. R. R.	Friday	Aug. 1
Allianca	P. R. R.	Thursday	Aug. 7
Colon	P. R. R.	Tuesday	Aug. 12
Advance	P. R. R.	Tuesday	Aug. 19
Panama	P. R. R.	Monday	Aug. 25
Allianca	P. R. R.	Saturday	Aug. 30
Colon	P. R. R.	Saturday	Sept. 6
Advance	P. R. R.	Friday	Sept. 12
Panama	P. R. R.	Thursday	Sept. 18
Allianca	P. R. R.	Wednesday	Sept. 24
Colon	P. R. R.	Tuesday	Sept. 30

CRISTOBAL TO NEW YORK.

Colon	P. R. R.	Thursday	July 31
Advance	P. R. R.	Thursday	Aug. 7
Panama	P. R. R.	Wednesday	Aug. 13
Allianca	P. R. R.	Tuesday	Aug. 19
Colon	P. R. R.	Sunday	Aug. 24
Advance	P. R. R.	Friday	Aug. 31
Panama	P. R. R.	Saturday	Sept. 6
Allianca	P. R. R.	Thursday	Sept. 11
Colon	P. R. R.	Thursday	Sept. 18
Advance	P. R. R.	Wednesday	Sept. 24
Panama	P. R. R.	Tuesday	Sept. 30

NEW YORK TO COLON.

Zacapa	U. F. C.	Wednesday	July 23
Emil L. Boas	H. A.	Saturday	July 26
Sixola	U. F. C.	Saturday	July 26
Almirante	U. F. C.	Wednesday	July 30
Prinz Joachim	H. A.	Saturday	Aug. 2
Carrillo	U. F. C.	Saturday	Aug. 2
Danube	R. M.	Saturday	Aug. 2
Santa Marta	U. F. C.	Wednesday	Aug. 6
Pastores	U. F. C.	Saturday	Aug. 9
Carl Schurz	H. A.	Saturday	Aug. 9
Metapan	U. F. C.	Wednesday	Aug. 13

COLON TO NEW YORK.

Metapan	U. F. C.	Thursday	July 31
Prinz August Wilhelm	H. A.	Tuesday	Aug. 5
Tivives	U. F. C.	Tuesday	Aug. 5
Tagus	R. M.	Tuesday	Aug. 5
Zacapa	U. F. C.	Thursday	Aug. 7
Emil L. Boas	H. A.	Tuesday	Aug. 12
Sixola	U. F. C.	Tuesday	Aug. 12
Almirante	U. F. C.	Thursday	Aug. 14
Prinz Joachim	H. A.	Tuesday	Aug. 19
Carrillo	U. F. C.	Tuesday	Aug. 19
Oruba	R. M.	Tuesday	Aug. 19
Santa Marta	U. F. C.	Thursday	Aug. 21
Carl Schurz	H. A.	Tuesday	Aug. 26
Pastores	U. F. C.	Tuesday	Aug. 26

NEW ORLEANS TO COLON.

Atenas	U. F. C.	Saturday	July 26
Parismina	U. F. C.	Wednesday	July 30
Turrialba	U. F. C.	Saturday	Aug. 2
Cartago	U. F. C.	Wednesday	Aug. 6
Abangarez	U. F. C.	Saturday	Aug. 9

COLON TO NEW ORLEANS.

Abangarez	U. F. C.	Thursday	July 31
Heredia	U. F. C.	Thursday	Aug. 2
Atenas	U. F. C.	Thursday	Aug. 7
Parismina	U. F. C.	Saturday	Aug. 9

Cold Storage Prices.

The following changes have been made in the list of cold storage articles:

Apricots, 15 cents per pound, added to stock.

Peaches, 10 cents per pound, added to stock.

Plums, 10 cents per pound, added to stock.

Sale of Musical Instruments.

MOUNT HOPE, C. Z., July 26, 1913.

Sale of musical instruments and property formerly pertaining to the Isthmian Canal Commission Band is authorized. List includes 14 instruments and cases, music stands, and a quantity of sheet music. All the items can be seen at the storehouse for obsolete material at Mount Hope. Prices will be quoted upon application.

C. NIXON,
Depot Quartermaster.

Sale of Belting.

MOUNT HOPE, C. Z., July 26, 1913.

In the storehouse for obsolete material there is a quantity of belting amounting to 1,304 pounds of better quality, which will be sold at \$.12 per pound, and 3,142 pounds of second quality, which will be sold at \$.08 per pound. Belting can be seen any day at the storehouse at Mount Hope.

C. NIXON,
Depot Quartermaster.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is published free of charge, one copy each to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications,
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Wave Action on Limon Bay Shore Line.

On account of the erosion that is taking place on the shore of Limon Bay, immediately to the west of the west channel, it has been decided to construct temporary wing dams, with a view of ascertaining whether this method will provide a sufficient check on the wave action to warrant the construction of permanent rock dams later. A considerable section of the shore at this point has been worn away, and erosion will probably continue unless preventive measures are taken. As the proposed wing dams are an experiment, refuse piling and cheap lumber will be used, so that the entire cost will be only about \$2,000. The dams are expected to hold together for at least a year, and in that time, opportunity will be afforded of studying their effect on the shore line. Should there be a reasonable amount of material deposited inside the dams within the above period, it would indicate that structures of a more permanent character will be all that is necessary to keep the shore from eroding further.

Completing Backfill at Upper End of Gatun Locks.

The core wall extending from the upper end of the west side wall of Gatun Locks into the east end of Gatun Dam has been completed by filling, with about 70 cubic yards of concrete, the gap which had been left for the passage of trains to the lake side of the dam and, formerly, to the upper approach to the locks. The core was built from ground rock, at an average elevation of 15 feet above sealevel, to elevation 92, even with the walls of the upper approach; it is four feet wide at the top, and the gap which was recently filled was about 20 feet wide and 15 feet deep. Following the completion of the wall, forces of the Atlantic Division are dumping red clay into the hollow west of the backfill, where the railroad tracks were, and completing the connection between backfill and dam. The clay is obtained from the west side of the

spillway discharge channel, from the excavation by steamshovels engaged in reducing the lower side of Spillway Hill to evenness with the terreplain of the dam.

On the east side of the upper end of the locks, nine double team scrapers are being used in smoothing the backfill at the 92-foot elevation. It is purposed, by running roads and walks over this site, and planting it in trees and shrubbery, to make it a decorative park. At the upper end the backfill sloping down to the lake is being paved with concrete from the top to a line about 15 feet below the normal level of the lake, in order to protect the fill from the action of the waves. The paving is being laid six inches thick, on an armor of rock about a foot deep, in squares five feet on the side. Each square is provided with a 4½-inch weeper, and is anchored by two 30-inch lengths of 4½-inch iron pipe filled with concrete. This work extends from the offset wall at the lock entrance to the west end of the concrete wharf for small boats, near the railroad station, a distance of about 300 feet. It is laid on a slope slightly greater than one in three, and the surface width of the belt of paving is 45 feet, exclusive of a 6-inch coping, 24 inches wide, running along the top.

Term "Common Laborers' Kitchens" Abolished.

The designation "Common laborers' kitchens" has been dropped by the Subsistence Department, and a consolidation of the accounts of the European laborers' messes and the kitchens has been made, as of July 1, under one head to be known as "Laborers' messes." There have been no common laborers' kitchens maintained in separate buildings for some time past, and, as all of the colored laborers have their food passed out to them from the serving windows of the European laborers' messes, the account is really a distribution, as a steward sees it, between the mess account and the steward's account for each individual mess. Hereafter, it will be considered as so many 40-cent, and so many 27-cent rations served. The kitchens will no longer be known by a number, but the present numbers of the messes will be retained, without using the word "European."

Police to Have Charge of Zone Markets.

The work of inspecting the Canal Zone public markets and slaughter houses was turned over to the Division of Police and Prisons, and placed immediately under the jurisdiction of the Chief of Police, on August 1. Seven markets and one slaughter house are operated in the Zone at the present time. The markets are at Folks River, Gatun, Las Cascadas, Empire, Culebra, Paraiso, and Pedro Miguel. The slaughter house is at Empire. The market at Gorgona was closed, due to the abandonment of the town, on July 15. The force authorized in connection with market operations consists of one inspector

and four foremen. Under the new arrangement, the Division of Police and Prisons will take over this force, and will see that all regulations are complied with. The collection of stall rents, etc., will continue to be made by the district tax collectors.

Record Day's Work in "Pulling" Cable.

The force engaged in "pulling" cable into the conduits at Miraflores Locks established a local record on Monday, July 25, when 7,444 feet of 5-conductor cable and 10,000 feet of 8-conductor cable were "pulled" into the ducts in the center wall of the upper lock, a total of 17,444 feet, or over three miles, of cable in a day of eight hours. This record was made possible by the fact of so little interference during the day by other lock operations.

Marine Barracks.

An Act making appropriations for the naval service for the fiscal year ending June 30, 1914, was approved on March 4, 1913, and included provision for the erection of barracks, quarters, and other buildings for the accommodation of United States Marines stationed on the Isthmus. The amount appropriated for this purpose was \$400,000. The office of the Chairman and Chief Engineer has received advice from Washington that the construction of the buildings has been held up pending the visit of the Secretary of the Navy to the Isthmus.

Hotel Washington Improvements.

Ornamental iron gates are being placed at the entrances to the grounds at the Hotel Washington in Colon. The east gates are already in place. There will be large double gates at the driveway entrance on the south side, and one gate on the west side.

Retirement of Cars to Save Repair Costs.

Fifty-three Lidgerwood cars in the transportation service of the Canal Commission had been retired up to and including July 23, in order to avoid the cost of repairing them. This action has not interfered with the work in any way, as the cars were not required for any other department or division, with the exception of the Panama railroad, which may take over 25 of them for its commercial service. Lidgerwood cars Nos. 969, 1051, 1617, and 1710 will be turned over to the Quartermaster's Department for sale.

Transportation of Material Between Shops.

In order that material may be promptly handled between Gorgona and Empire shops, and the Balboa terminals, the hauling of bad order cars from the Fifth Division and terminal work will be consolidated into a daily train service between Balboa and Gorgona, in charge of Trainmaster Holmes. The train will leave the yardmaster's office at Balboa at 2 p. m., each workday, making a stop at Empire shops. It will leave Gorgona on the return trip about 2.30 p. m. Any material

at the Balboa terminals or Balboa dump destined for Empire or Gorgona shops, will be loaded and turned over to the yardmaster not later than 12 noon each day. All material at Gorgona shops destined for Empire shops, Balboa terminals, Balboa storehouse, and Balboa dump, will be loaded and car placed before 2 p. m. each workday. All

material at Empire shops destined for Gorgona shops, will be loaded and car placed, not later than 1.15 p. m. each workday. This train is to haul castings made at Balboa, to Gorgona and Empire after foundry is installed in the permanent shops. The work of installing the foundry will be begun on August 11.

LABOR FORCE AND QUARTERS IN JUNE.

The force report for June 25 shows the actual working force of the Canal Commission to be 33,213; of the Panama railroad, 5,088, and of the contractors, 3,961, a total effective working force of 42,262 men. The gold force on the Canal work, composed almost exclusively of white Americans, was 4,282, a reduction of 55, as compared with the previous month. A statement of the Canal force, by divisions, follows:

DEPARTMENT OR DIVISION.	SILVER EMPLOYES*											Total silver.	Total gold.	Grand total		
	Artisans.					European laborers.		West India laborers								
	Monthly	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.				10 cents.	7 cents.
Construction & Engineering.	4,469	10	11	391	1,343	3,855	3,315	767	106	394	5,766	3,424	231	24,084	3,224	27,308
Civil Adm'tion	154			2	3	14						6		179	336	515
Sanitation.....	654			3	3	5					8	378		1,052	355	1,407
Quartermaster's	911			20	306	264	43	1	1		150	847		2,837	179	3,016
Subsistence.	725			2	1	1							14	743	48	791
Disbursements.	7													7	17	24
Examination of Accounts.....	29													29	123	152
Total.....	6,949	10	11	718	1,650	4,139	3,358	768	107	394	5,924	4,655	1,245	28,931	4,282	33,213
Month previous	6,251	10	9	68	1,573	4,241	3,650	729	143	391	6,104	3,892	1,246	27,918	4,337	32,255

I. C. C. force, 33,213; Panama railroad force, 3,757; Panama railroad commissary force, 1,331; total 38,301.

*All wages specified are in gold. †Includes three at five cents. ‡Includes one at five cents.

The force report of the Department of Construction and Engineering, including the employees of contractors, as of June 25 was, as follows:

DIVISION.	SILVER EMPLOYEES*														Total silver.	Total gold.	Grand total.
	Artisans.					European laborers.		West Indian laborers.									
	Monthly	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.				
Chief Engineer.	2,566		1	241	743	2,394	1,324	478	31	1	3,459	774	82	12,096	1,429	13,525	
Mechanical Div.	278	10	9	66	152	511	37	2			1,143	8	15	2,303	906	3,209	
Atlantic Div.	349		1	62	342	606	566	125			501	215	29	3,000	282	3,282	
Central Division	1,076			22	101	344	1,388	162	75	394	659	2,355	105	6,685	607	7,292	
Pacific Division.																	
U. S. Steel Products Co.														147	174	321	
Chicago House														20	4	24	
Wrecking Co.																	
McClintic-Marshall Co.														3,224	392	3,616	
Total.....	4,469	10	11	391	1,343	3,855	3,315	76	106	394	5,766	3,424	1,311	24,084	3,224	27,308	
Month previous	3,767	10	9	342	1,268	4,145	3,621	726	106	391	5,999	3,693	1,231	23,312	3,245	26,557	

*All wages specified are in gold. †Includes two at five cents. ‡Includes one at five cents.

QUARTERS.

A report of Commission quarters occupied on June 30, follows:

PLACE.	Gold.			Europeans.			West Indians.		
	Men	Women	Children	Men	Women	Children	Men	Women	Children
Balboa.	289	36	44	325			894		
Ancon.	528	309	210	6			730	5	
Corozal.	769	144	142	382			509	8	5
Miraflores.	17	2	4	399	4	11	351	7	6
Pedro Miguel.	329	72	87	293	3	2	238	36	50
Paraiso.	263	89	93	152	3	11	238	106	159
Culebra.	363	153	151	478	48	93	414	111	176
Empire.	700	295	287	417	52	73	488	143	222
Las Cascadas.	192	105	145	20	12	33	231	148	171
Bas Obispo.	78	46	38	132	10	23	146	41	53
Gorgona.	373	72	65	29			365	69	132
Gatun.	674	206	211	916	20	23	708	29	12
Cristobal.	760	294	327	127			1,559	224	365
Tofo Point.	46	14	18	82			253		
Porto Bello.	60	22	21	116			301	1	2
Total.	5,441	1,859	1,973	4,874	151	269	7,435	928	1,353

(1) Includes Sabanas police station, Taboga Island, Culebra Island, Palo Seco and Naos Island. (2) Includes 66 Panamanians. (3) Includes 14 East Indians. (4) Includes 61 Panamanians. (5) Includes Matachin. (6) Includes Colon Hospital. (7) Includes 20 Asiatics. Gold force of contractors (included above). 33 families: 542 bachelors.

JOINT LAND COMMISSION.

Opinion on Demurrer to the Jurisdiction of the Commission.

The following opinion has been announced by the Joint Land Commission:

In the matter of the claim of Juan Sotillo, for property in the town of Gorgona, docket No. 131, July 25, 1913.—On June 23, 1913, Counsel for the United States filed a demurrer to the jurisdiction of the Commission in the matter of the claim of Juan Sotillo, which claim is for property owned in the town site of Gorgona. In this plea to the jurisdiction of the Commission, Counsel for the United States contends that any award made to the claimant

"Would constitute a departure from the powers delegated to the Joint Land Commission by the high contracting parties, in the convention between the United States of America and the Republic of Panama, ratifications of which were exchanged at Washington on February 26, 1904, in that the claimant has suffered no damage by reason of the grants contained in said convention, or by reason of the operations of the United States of America within the meaning of Article VI of said treaty, as it is shown on the face of the claim filed that the use and occupation of the land upon which the alleged improvements were located arose out of a private agreement, license, or contract between the United States of America and the claimant. "It is denied that this claimant has any rights in hand to the property described in the statement of claim against the United States of America, except such rights as are derived by him under the terms of Isthmian Canal Commission lease No. 4093, cancelled the first day of April, 1911."

Briefly stated, the position taken by the Counsel for the United States that the status of this claimant is determined by the terms of Isthmian Canal Commission lease No. 4093, and that under the terms of such lease no rights could accrue within the contemplation of Article VI of the treaty ratified February 26, 1904. Furthermore, that the rights of this claimant must be adjudged exclusively by the terms of the lease, and that any rights which may have accrued prior to the issuance of such lease are divested by its acceptance and cannot, therefore, receive the consideration of this Commission.

The questions raised by this plea are so important, involving the status of most of the claimants in the town of Gorgona, that it becomes necessary to enter into a detailed analysis of the situation.

The legislation of the United States of Colombia, governing the organization and powers of municipalities, was characterized by a broad spirit of liberality in granting to such municipalities the ownership of land included within the municipal district, and in allowing the local authorities wide discretionary power to sell or to rent the municipal lands thus granted. Provisions to this effect are to be found in the following laws:

- (a) Article No. 3 of Law No. 2 of March 6, 1832.
- (b) Article 177 of Law No. 1 of May 18, 1834.
- (c) Article No. 26 of Law No. 3 of June 13, 1844.
- (d) Article 18 of the Law of October 22, 1855, of the Sovereign State of Panama.
- (e) Articles 1 to 6, inclusive, of the Law, No. 23, of December 31, 1867.
- (f) Articles 238, 240, and 248 of Law No. 149 of December 13, 1888.

Gorgona was recognized as a parochial district prior to 1855. It was organized as a municipal district by the law of September 12, 1855, of the Sovereign State of Panama. From that date, Gorgona enjoyed all the rights and powers granted to municipalities under Colombian law.

In 1886, the town of Gorgona was destroyed by fire. In order to meet the emergency, the civil and military governor of the National Department of Panama, Ramón Santo Domingo Vila, issued the decree of March 16, 1886. This decree, which was intended to facilitate the reconstruction of Gorgona, contains the following provisions:

"Article III. Former occupiers of town lots shall have preference in the granting of permits for the reconstruction of their houses on such lots, or in case it is impossible to grant to them permits for their former locations, owing to the change of of the town plan, new lots, as near as possible to their old locations shall be assigned."

"Article IV. If, ninety days after the granting of a permit, the person to whom such permit has been granted has not undertaken the work of construction the permit shall be deemed to be cancelled."

"Article V. The rights arising out of the granting of a permit cannot be transferred without the approval of the authority granting such permit."

"Article VI. A license for the use of a town lot does not give title to the lot occupied, and such permit must be renewed every five years."

"Article VII. The Municipality of Gorgona shall collect, at the time of the granting of the permit, a fee, which shall not exceed fifty (50) centavos for every square meter of land for which permits have been granted, and an annual rental of forty

(40) centavos per square meter, to be paid quarterly in advance. The revenue from this source shall be applied exclusively to the construction and preservation of the public buildings and barracks in the district of Gorgona."

"Article VIII. The owners of houses which were not destroyed by fire, or which were erected thereafter, shall pay the annual rental referred to in the preceding article, and the owners of such houses are required to file with the authorities of the District of Gorgona a statement as to the area of the town lots which they occupy and the exact boundaries of such lots."

Less than two years after the issuance of this decree (December 3, 1888) the Republic of Colombia enacted a comprehensive law governing the organization and powers of municipalities. This was the law in force at the time of the acquisition of the Canal Zone by the United States. It provides (Art. 248) that the property of the former municipal districts be transferred to the reorganized municipalities. Furthermore, all vacant lands and all lands, of which there were no known owners, if situated within the limits of the municipality, are declared to be the property of the municipality.

This law also clearly recognizes the power of the municipality to alienate town lots within its limits, and, under certain circumstances, makes such alienation mandatory. Article 244 of the act of December 3, 1888, reads, as follows:

"Every town lot belonging to the municipality, which is situated within the limits of the town and which is not necessary for some public use, shall be sold in accordance with established procedure."

In order to protect the rights of those who had, prior to 1888, rented town lots from the municipality, the Colombian Congress passed Law No. 50 of November 6, 1894, which provides, (Article V):

"When town lots belonging to the municipality and situated within its limits are sold, those persons who have erected buildings on such lots shall, all other things being equal, enjoy the preference in the adjudication of such lots. If, however, the owner of the building does not desire to purchase the lot at the highest price bid at public auction, his rights shall be determined by the application of Articles 739, 966, and 970 of the Civil Code."

The three articles of the Civil Code herein referred to provide:

"Art. 739. The owner of land upon which another person, without his knowledge, shall have built, planted, or sowed, shall have a right to make the building, planting, or sowing his own, upon the compensation prescribed in favor of possessors in good or bad faith in the Title of *Revendication*, or to oblige the person who built or planted to pay him a just price for the land with legal interest for all the time he may have had possession thereof, and the one who sowed to pay him the rental and indemnify him for damages."

"If the building, planting, or sowing shall have taken place with the knowledge and consent of the owner of the land, he shall be obliged, in order to recover it, to pay the value of the building, planting, or sowing."

"Art. 966. A defeated *bona fide* possessor is also entitled to an allowance for the useful improvements made before the answer to the suit."

"By useful improvements shall be understood only such as shall have increased the market value of the thing."

"The person seeking the *revendication*, shall choose between the payment of the value thereof at the time of the restitution of the works of which the improvements consist, or the payment of the increased value of the thing at said time due to the said improvements."

"With regard to the works done after the suit was answered, the *bona fide* possessor shall have the rights only which are granted in the last paragraph of this article to a possessor in bad faith."

"The possessor in bad faith shall not be entitled to any allowance for the useful improvements referred to in this article."

"But he may take with him the materials of which said improvements consist, provided that they can be removed without damage to the thing recovered, and that the owner refuses to pay him the price which such materials would be worth after their separation."

"Art. 970. When there shall be due the defeated possessor a balance by reason of expenses and improvements, he may retain the thing until the payment is made, or security to his satisfaction is given."

It is evident, therefore, that the lessors of town lots belonging to the Municipality of Gorgona acquired certain definite rights under Colombian and Panamanian law, and the question arises whether any rights thus acquired were divested or in any way affected by:

1. Ordinances or resolutions of Municipality of Gorgona, passed subsequent to American occupation.
2. Revocable leases or licenses issued by the Isthmian Canal Commission.

Resolutions and Ordinances of the Municipality of Gorgona.

The resolutions and ordinances of the Municipality of Gorgona relating to the leasing of municipal property are, as follows:

- (a) Resolution No. 5 of the Municipal Council of Gorgona, dated March 20, 1905.

- (b) Ordinance No. 2 of the Municipality of Gorgona, dated February 27, 1907, amending resolution No. 5 of March 20, 1905.
- (c) Ordinance No. 8 of the Municipality of Gorgona, dated May 17, 1905.
- (d) Ordinance No. 1 of the Municipal Council of Gorgona, dated February 27, 1907, amending ordinance No. 8 of May 17, 1905.

The resolution of the municipal council, dated March 20, 1905 (No. 5), together with the amending ordinance of February 27, 1907 (ordinance No. 2), relate to the rental of town lots, whereas ordinance No. 8, dated May 17, 1905, and ordinance No. 1, dated February 27, 1907 and approved February 28, 1907, evidently relate to the leasing of agricultural lands. For the determination of the status of the claimants now under consideration, it is only necessary to consider the resolutions and ordinances relating to town lots.

The resolution of March 20, 1905, provides a procedure for the rental of town lots. The provision of Article 1 of this resolution declaring null and void "all grants of lots or lands within the radius of the town that date from more than ninety days from the date of the concession and on which the concessioners have not begun to build," simply follows the provisions of Article 4 of the decree of Governor Vila of 1886. This ordinance in Article 9 provides, by implication, for leases for a term of one year, and makes no mention of the rights or obligations of tenants in case the lease is terminated. The termination of leases is provided for in the ordinance No. 2 of February 28, 1907, amending resolution No. 5. The pertinent portion of this ordinance reads as follows:

"Article 13. The lessee of any lot of land leased under the terms of this resolution shall deliver the same when called upon by the Mayor to do so, in the event the land is required for use by the municipality, the Government of the Canal Zone, or the Isthmian Canal Commission."

"This amendment shall not be construed to abridge any rights which present lessees may have to notice respecting revocation of their leases or to any compensation for improvements placed on the land. It is, however, understood that upon expiration of the period of notice to which lessees may be entitled under the laws in force in the Canal Zone—such period dating from the approval of this ordinance—all lessees will hold their land subject to the terms of this amendment."

After careful consideration of the whole situation, the Commission has reached the conclusion that, while it was entirely within the power of the Municipal Council of Gorgona to provide for the leasing of town lots, it was beyond the power of the municipality to amend either the law of 1894 or the provisions of the Civil Code.

Whatever, therefore, may have been the conditions under which the town lots of Gorgona were leased, the ordinances of the Municipality could not deprive tenants of rights secured to them by the act of 1894, and by Articles 739, 966, and 970 of the Civil Code.

That the action of the Municipality could not have the effect of undermining or divesting rights guaranteed under the Civil Code is further confirmed, if such confirmation were necessary, by an examination of the general policy of the Government of the United States in the Canal Zone as laid down by the President of the United States in his instructions to the Secretary of War, under date of May 9, 1904, the pertinent portion of which reads, as follows:

"The inhabitants of the Isthmian Canal Zone are entitled to security in their persons, property, and religion, and in all their private rights and relations. They should be so informed by public announcement. The people should be disturbed as little as possible in their customs and avocations that are in harmony with principles of well-ordered and decent living."

"The laws of the land, with which the inhabitants are familiar, and which were in force on February 26, 1904, will continue in force in the Canal Zone and in other places on the Isthmus over which the United States has jurisdiction until altered or annulled by the said Commission, but there are certain great principles of government which have been made the basis of an existence as a nation which we deem essential to the rule of law and maintenance of order, and which shall have force in said Zone. The principles referred to may be generally stated, as follows:

"That no person shall be deprived of life, liberty, or property without due process of law; that private property shall not be taken for public use without just compensation; that in all criminal prosecutions the accused shall enjoy the right of a speedy and public trial, to be informed of the nature and cause of the accusation, to be confronted with the witnesses against him, to have compulsory process for obtaining witnesses in his favor, and to have the assistance of counsel for his defense; that excessive bail shall not be required nor excessive fines imposed, nor cruel or unusual punishment inflicted; that no person shall be put twice in jeopardy for the same offense, or be compelled in any criminal case to be a witness against himself; that the right to be secure against unreasonable searches and seizures shall not be violated; that neither slavery nor involuntary servitude shall ex-

ist except as a punishment for crime; that no bill of attainder or *ex post facto* law shall be passed; that no law shall be passed abridging the freedom of speech or of the press, or of the rights of the people to peaceably assemble and petition the government for a redress of grievances; that no law shall be made respecting the establishment of religion or prohibiting the free exercise thereof."

It now remains to examine the effect of the acceptance of Isthmian Canal Commission leases or licenses on the status of those claimants who occupied town lots either under the renewable permits issued under the decree of March 16, 1886, or under leases from the Municipality of Gorgona granted prior to the Executive Order of the President of the United States, dated March 13, 1907, which order abolished the municipalities of the Canal Zone.

Tenants of municipal lands belonging to this category acquired certain definite rights to compensation in case of eviction, under Law No. 50 of November 6, 1894, and under Articles 739, 966, and 970 of the Civil Code. The rights were not divested by the acceptance of the Isthmian Canal Commission licenses, and the claims of such persons, therefore, come within the jurisdiction of this Commission.

The Commission has, therefore, reached the conclusion:

First—That nothing contained in the resolution No. 5 of the Municipality of Gorgona, dated March 20, 1905, or in ordinance No. 2, dated February 28, 1907, can deprive those persons who occupy town lots either under the decree of March 16, 1886, or under a lease from the Municipality of Gorgona, of the protection granted by Law No. 50 of 1894, or of Articles 739, 966, and 970 of the Civil Code, and it is immaterial in this connection whether such leases were acquired from the Municipality of Gorgona prior to American occupation or subsequent thereto.

Second—Those persons, who, prior to March 13, 1907, possessed either renewable permits under the decree of March 16, 1886, or leases from the Municipality of Gorgona, are entitled to the protection of Article 5 of the law of 1894 and of the provisions of Articles 739, 966, and 970 of the Civil Code, specifically referred to in that law, and the subsequent acceptance of Isthmian Canal Commission leases or licenses does not divest them of the rights thus acquired.

Third—The plea of Counsel for the United States in this case does not raise the question as to the status of claimants, who, at the time of the acceptance of Isthmian Canal Commission leases or licenses did not possess either a permit issued under the decree of 1886 or a lease issued by the Municipality of Gorgona.

In view of the conclusions herein formulated, the Commission orders that the plea of Counsel for the United States to the jurisdiction of the Commission be overruled.

(Signed) FEDERICO BOYD, ROLAND P. FALKNER, SAMUEL LEWIS, L. S. ROWE, Commissioners.

Examinations by Board of Local Inspectors.

The Board of Local Inspectors will conduct examinations at the Administration Building, Ancon, on Wednesday, August 13, 1913, beginning promptly at 2 p. m., for persons desiring to procure the following classes of licenses: Pilots, masters, mates, marine engineers, chauffeurs, and navigators of motor boats. All applicants for licenses must procure from the Executive Office, Ancon, forms of application, and information respecting the filling out of same, at least one day before the examination. Applicants for chauffeurs' licenses must also bring automobiles.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the two weeks ending August 2:

DATE.	Cubic yards.	Hours worked.
July 21.....	.....	.....
July 22.....	.....	.....
July 23.....	1,409	7.05
July 24.....	1,886	6.40
July 25.....	1,930	7.05
July 26.....	1,850	7.15
Total.....	6,805	28.05
July 28.....	1,614	6.15
July 29.....	2,261	6.35
July 30.....	1,650	6.10
July 31.....	2,043	7.35
August 1.....	1,868	6.20
August 2.....	1,077	3.10
Total.....	10,503	36.05

GEOLOGY OF WESTERN PANAMA

I.

Chiriqui Volcano.

By D. F. MACDONALD, COMMISSION GEOLOGIST.

Recently, it was the writer's good fortune to travel through a considerable portion of the Panamanian provinces of Chiriqui and Veraguas. The trip was made chiefly under the auspices of the Smithsonian Institution, but the Canal Commission, and the United States Geological Survey, were indirectly interested in the geological information obtained.

The full results of the journey, which lasted about two months, will be published later by the Smithsonian Institution. It has seemed well, however, to set forth in THE CANAL RECORD an outline of some of the items of interest that were gleaned on this trip. In this issue the so-called Chiriqui volcano will be briefly treated.

Perhaps the most interesting new thing discovered about the extinct volcano was the evidence that indicated about the number of centuries that have elapsed since the last volcanic outburst. It will be remembered that about a year ago, the newspapers told how an "Eruption of Chiriqui volcano" had flung death and destruction far over western Panama. This proved to be a newspaper "story," for the last explosive outburst of the mountain did not occur in 1912, but many hundred centuries earlier.

The majestic Chiriqui peak stands as a king among mountains. Towering over 11,000 feet above sealevel, it overlooks all the other rugged crests of western Panama. From its summit, on a clear day, one can see the wide coastal plain of David meeting the low-lying shore of the Pacific, 40 miles away. Streams, like loose-lying silvery threads flung oceanward, tie the mountains to the sea, and on their banks here and there are distant specks of little native villages. Scattered grazing herds dot the nearer plains, and a tiny dust cloud, barely visible in the blue haze of the distant valley, tells of a train of bull carts toiling from David out to the coffee plantations, near the foot of the mountain. Turning then to the northward, one may behold lessening waves of mountains dimming in the distance, where they meet the wide embayments of the Caribbean shore. In the bays and beyond the headlands, dark island spots are scattered along the landward margin of the sunlit sea. These remnants of a submerged mountain group stand like a struggling rearguard, protecting the main shore line against the foam-crested trade wind waves.

Gazing out over this pleasing picture, one's æsthetic sense may be slightly shocked when he realizes that he is only on the top of an ash heap, for this mighty peak was built up by emanations of volcanic ash and débris, blown out during long centuries from a crater, or group of craters. The last explosion, or series of explosions, was more violent than the rest, for it blew the top off the mountain, and scattered the débris far and wide, burying the surrounding country under some hundreds of feet of volcanic ash and ejectamenta. Later, streams formed on the new surface, and these slowly entrenched themselves in the new volcanic formation. The Caldera River thus excavated for itself a cañon that is 350 feet deep and about half a mile wide—a vaster trench by far than

Culebra Cut, and all done by a river, without drill, powder, or steamshovel. In the flat, wide bottom of this cañon, close to the bank of the stream, are some old Indian graves, and nearby, are some carved stones, or "piedras pintadas." From the weathering of these, and from the pottery and other objects, remnants of an ancient Indian culture buried in them, it is known that they are at least 1,000 years old, and probably considerably more. Since these graves were made, the Caldera River has not cut its channel more than 10 feet deeper over about one-tenth of the total width of its valley bottom. This is equivalent to a deepening of the whole width of the valley one foot. From these data it is seen that the minimum rate of excavation of the Caldera Valley, under approximately present conditions, would be one foot per thousand years. At this rate, the present valley, which is 350 feet deep, would require 350,000 years for excavation. However, during the first few centuries excavation of it went on much more rapidly than now. This is due to the fact that in falling through the atmosphere the coarser rocks of the volcanic débris dropped faster, and are more concentrated in the lower part, while the upper parts of this formation are chiefly of fine ash. Hence, the work of washing out Caldera Valley to its present form was not fraught with much difficulty while the river was cutting through this fine top material. Later, the river channel became somewhat choked by the boulders that accumulated in it, as the cañon was cut deeper, and the work of erosion was thus much retarded. It is also known that volcanic explosions are generally followed by great downpours of rain. Such floods must be considered in the time estimated, for they would greatly hasten the early work of erosion. In order to allow for the more rapid digging out of this cañon by the stream, in the early stages of its history, there might be deducted 33½ per cent from the above mentioned estimate of time. In estimating conservatively the minimum time since the last eruption, 50 per cent may be deducted from the first estimate of 350,000 years, leaving a period of 175,000 years as the least time since this kingly mountain fell away from the pyrotechnic grandeur of its former estate, and became a dead—a good—volcano.

Visiting Masons.

A delegation from the Grand Consistory of the State of Louisiana, consisting of 27 Masons, and a party of about 75 others, including a number of ladies, arrived on the steamer *Atenas*, on Thursday, July 31. The purpose of the Masons' visit was to confer degrees from the fourth to the thirty-second, inclusive, on a class of candidates from the Canal Zone. Ancon was made the official headquarters, and the work in connection with the conferring of the degrees was conducted at Ancon hall, continuing from Saturday night until a late hour on Sunday night. On Monday evening, an extra session was held during which degrees were conferred on six candidates. The total number of candidates initiated into the various degrees was 95.

The social features of the visit consisted of trips by automobile to points of interest in Panama and environs, a trip to the island of Taboga, a sightseeing trip over the Canal on Monday, and a dance at the Hotel Central

on Sunday evening. A number of the party left on Monday for Bocas del Toro, and will return in time to join the others and take the *Atenas* for New Orleans on Thursday, August 7.

A banquet will be held at the Hotel Washington on Saturday evening, August 9, in honor of the newly made thirty-second degree Masons, and their families. The arrangements are in charge of Mr. W. Edgar Parker, Mr. S. H. Marcuse, and Mr. Gerald D. Bliss. Messrs. Parker and Marcuse were the representatives appointed by the Grand Master of Kadosh to look after the visiting members of the consistory. In recognition of his work in this regard, the members presented Mr. Parker with a silver pitcher.

Concrete Work in Locks and Spillways.

Concrete work in the Canal locks is nearly completed, the aggregate amount in place at the close of work on August 2, being 4,472,866 cubic yards.

A statement of the concrete laid in the three sets of locks for the Canal, and in Gatun and Miraflores spillways, as of August 2, follows:

GATUN LOCKS.		Concrete laid. Cubic yards.
July 28.....		78
July 29.....		126
July 30.....		116
July 31.....		120
Aug. 1.....		122
Aug. 2.....		164
Total.....		726
Previously reported.....		2,043,035
Grand total.....		2,043,761
PEDRO MIGUEL LOCK.		
July 27.....		5
July 28.....		15
July 29.....		15
July 30.....		19
July 31.....		45
Aug. 1.....		20
Aug. 2.....		19
Total.....		138
Previously reported.....		922,108
Grand total.....		922,246
MIRAFLORES LOCKS.		
July 27.....		11
July 28.....		190
July 29.....		144
July 30.....		202
July 31.....		177
Aug. 1.....		279
Aug. 2.....		233
Total.....		1,236
Previously reported.....		1,505,323
Grand total.....		1,506,759
GATUN SPILLWAY.*		
July 28.....		62
July 29.....		98
July 30.....		78
July 31.....		44
Aug. 1.....		76
Aug. 2.....		102
Total.....		460
Previously reported.....		230,844
Grand total.....		231,304
MIRAFLORES SPILLWAY.		
July 28.....		346
July 29.....		176
July 30.....		232
July 31.....		252
Aug. 1.....		291
Aug. 2.....		192
Total.....		1,489
Previously reported.....		72,073
Grand total.....		73,562

*Includes hydroelectric station.

The regular dance of the Cristobal Dancing Club will be held on Saturday, August 9, at the Commission clubhouse, Cristobal. Invitations or membership cards must be presented for admittance to hall.

WATERTIGHT LOCK GATES.

Adjustments at Hinge and Miter Ends of Leaves, and at Sills, to Prevent Leakage.

The lower guard gates at Gatun Locks, now protecting the lower and intermediate chambers against inundation by the waters of the Atlantic entrance, are withstanding the maximum pressure to which they will be subjected in actual operation. After they were closed on June 14, the water was let into the forebay from beyond the barrier which had separated the sections of the channel; as the water began to rise against the outer faces of the gates, they showed only slight leakage, and the pressure of the full head of 42 feet of water has forced the mitering leaves so closely together that the slight initial leakage ceased. These gates may be said to be practically watertight.

Each of the four leaves of these gates is 65 feet long, seven feet thick, 47 feet four inches high, and weighs 390 tons. Throughout their construction, special care was taken to perfect their alignment and make them fit exactly. A special machine was installed at the works of the contractors in the United States, by which both ends of the horizontal girders were planed at the same time. This machine remained unchanged until all the girders were completed. As the skeletons of the leaves were erected in the locks their alignment was checked with fine steel wires; it is believed

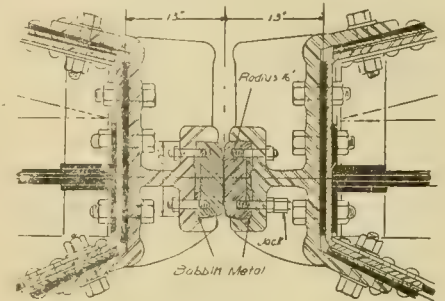
keep companion leaves at the same height; the heights of all completed gates agree within $\frac{1}{4}$ -inch. The stiffness of the leaves is so great that the total deflection at the bottom has never exceeded $\frac{1}{4}$ -inch, when the leaves were set on pintle and anchors, and swung repeatedly through full movements, without the buoying force of the water, by which the stresses will be lessened in operation.

The careful construction of the structural steel made possible a very exact adjustment of the bearing plates along the vertical ends of the leaves. The closeness of the joints between the two leaves at the mitering ends, and with the fixed castings at the hinge ends, is regarded as unprecedented in large scale steel construction.

The adjustment at the hinge, or quoin, ends of the leaves is indicated in the accompanying sketch (A). Heavy steel castings, shown in light cross hatching in the midst of the concrete, were embedded in the lock walls as they were built. The castings contained machined recesses at the end toward the lock chamber; the bearing plates of the hollow quoins (shown in dark hatching) were set in the recess and attached to the castings by 1-inch bolts, spaced 17 inches apart, while temporary stud bolts were placed at intervals of about two feet along the center line of the plates to assist in the adjustment. The exact center was determined by a plumb line placed directly over the center of the steel pintle on

ing embedded in the wall. The metal was poured through bolt holes about four feet apart, vertically. To avoid explosions from dampness and insure exact filling, hot compressed air was first blown into the space. Finally, the joints between the bearing plates and the castings were calked.

Corresponding bearings were provided in the end of the gate. Heavy steel castings

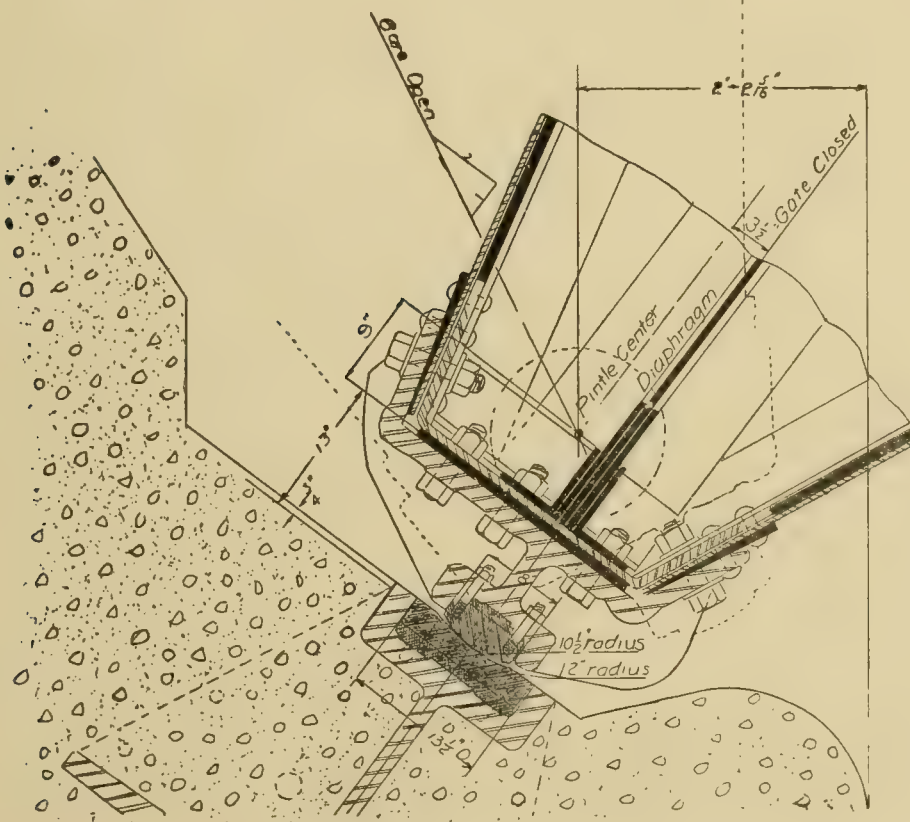


(B) MITER ENDS OF LEAVES OF CLOSED GATE.

(shown in light hatching in the sketch), with recesses at the outer ends, were securely riveted to the leaf, and to these, bearing plates were attached by means of bolts. The gate was then set on the pintle, as for operation, and swung to its closed position. Finally the bearing plates on the leaf were forced closely against the fixed plates in the wall casting, and held by means of adjustable bolts. The leaf was then swung into open position, exposing the faces of the bearing plates, and the latter were babbitted in the manner used for the fixed quoin plates.

These adjustments were always made early in the morning, to insure a uniform temperature throughout the leaf. It was expected originally to adjust the plates at the outer, or miter, ends of the leaves in the same way, by bringing the two leaves of a gate to correct closed position and pressing the bearing plates against each other by means of jacks. The variations in the lengths of leaves from temperature changes, even within short periods, made it necessary to use another method. In that adopted, the leaves are closed and the plates at top and bottom are brought into contact and fixed in their proper position. The leaves are then swung apart and the remaining plates adjusted in alignment, determined by means of a fine wire, with those at top and bottom. After the babbitting, the leaves are brought together again, and any small irregularities are corrected by grinding. A section of the adjusted plates of the two miter ends, in closed position, is shown in sketch (B).

Leakage at the bottoms of the leaves has been obviated by the use of a specially designed sill, using a rubber strip along the line of contact. A cross-section of the sill, with the leaf closed against it, is shown in sketch (C). As shown, a heavy timber is set in the concrete of the lock floor; this timber is not adjusted until after the quoin and miter bearings have been completely finished and the smaller timber attached to the leaf. The timbers having been adjusted, a strip of rubber, five inches wide and half an inch thick, is attached to the plate below the timber which is fastened to the plate below the timber cushion. The strip serves to prevent the



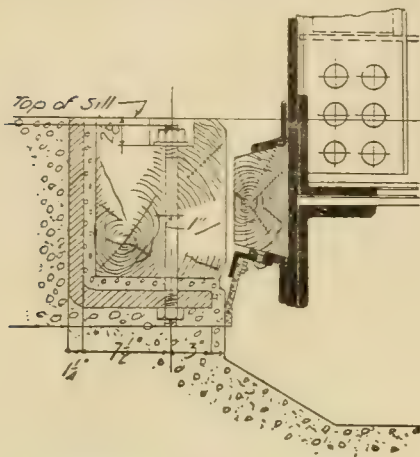
(A) JUNCTURE OF GATE LEAF WITH LOCK WALL.

that their greatest deviation from a plumb line does not exceed $\frac{1}{4}$ -inch for any of the leaves, even before the end castings are attached and the bearing plates adjusted. At the top of every fourth panel from the bottom, adjustable fillers were set between the vertical diaphragms and the girders above, in order to

which the bottom of the leaf was later to be placed.

After the plates were so exactly aligned that the deviation from exact correctness nowhere exceeded five-thousandths of an inch, melted babbitt metal was poured into the space between the plates and the heavy cast-

escape of water between leaf and sill, even when for any reason the timbers are not in



(c) CROSS-SECTION OF SILL, WITH LEAF CLOSED. absolute contact. This construction is novel and has proved to be effective.

PERSONAL.

Mr. Richard Lee Metcalfe, the new Head of the Department of Civil Administration, accompanied by his family, sailed on the *Panama* from New York, on Friday, August 1, and is due to arrive at Colon on Thursday, August 7.

Lieut.-Col. Eugene T. Wilson sailed for New York on the *Tivies* of the United Fruit Company's service on Tuesday, August 5, on his annual leave of absence.

Lieut.-Col. Charles F. Mason, accompanied by his family, will sail for the United States, on his annual leave, on the *Ancon*, on Saturday, August 9.

Lieut. Frederick Mears, accompanied by Mrs. Mears and their two children, will sail for New York, on the *Ancon*, on August 9, on his annual leave of absence.

Mr. Walter F. Beyer, returned from a two weeks' trip to Costa Rica on Monday, July 28.

Notary Public at Gatun.

In order that employes at Gatun who find it necessary to swear to survey and other property papers, or Government documents, may not be required to lose time to go to Cristobal and return, Sergeant Lawrence C. Callaway, in command of the Gatun police station, has been appointed a notary public.

Men Wanted to Drive Rivets.

The Mechanical Division at Gorgona is urgently in need of gold employes to drive rivets, or who are willing to learn to drive rivets. The rates of pay are 32, 38, and 44 cents an hour, depending upon skill. Application should be made at the office of Mr. S. G. Shearer, general foreman, Gorgona shops.

Record of Masons.

Application blanks for the "Biographical record of Masons on the Panama Canal," which is being published under the auspices of the Masonic Club of Empire, have been placed in the hands of the secretaries of the various Masonic bodies on the Isthmus. It is requested that all applications, as well as photographs, be sent to W. I. Beam, Empire, C. Z., at an early date.

SOCIAL LIFE OF THE ZONE.

Cristobal Woman's Club.

The Cristobal Woman's Club gave a reception on Wednesday afternoon, July 30, in honor of Mrs. Carl H. Elliott, who is leaving the Isthmus. Although a large number of the club members are away on vacation there were 25 women present to say goodbye to their former president and club associate. Mrs. Elliott has been a member of the board of the club since her arrival on the Isthmus in 1910. For one year she was the chairman of the education department; in 1910-11, she was first vice-president, and acting president. In October, 1911, she was elected president, and during the year of her office, Mrs. Elliott attended every club meeting and every meeting of the executive board. In 1912, she was chosen one of the vice-presidents, but since the resignation of Mrs. Storla, in February, 1913, Mrs. Elliott has been acting president. She was recording secretary of the Canal Zone Federation of Women's Clubs from 1911 to the disbanding of the organization in April, 1913. In recognition of her services to the Cristobal club, and as a souvenir of her life on the Isthmus, the women presented her with a set of sherbet glasses, heavily embossed with silver inlay, and a sugar bowl and cream pitcher of the same design.

At the request of the club women, a report was given of the progress of Elysus James, the blind boy, who is being educated at the expense of the Federation. The boy has done well in his work and it is expected that one year more of schooling in the Perkins Institute will be sufficient to equip him for a life of independence and self-support.

Church Notes.

The Reverend H. R. Carson, chaplain of Ancon Hospital and of St. Luke's Hospital chapel returned to the Isthmus on the *Parismina*, on Monday, August 4, after a six weeks' special leave of absence. During a part of the time of the chaplain's absence the services at St. Luke's were taken by the rector of Christ Church, but since the latter part of July, the church has been closed, the Sunday school only being maintained. Beginning on Sunday, August 10, the services will be resumed according to the following schedule: Divine service, with celebration of the Holy Communion on the first Sunday in each month at 10 a. m.; Holy Communion on the second and fourth Sundays in each month at 7 a. m.; morning prayer and litany on these Sundays at 10 a. m.; Sunday school every Sunday at 9 a. m. The chaplain may generally be found in the vestry of the church between 8 and 9 a. m., and between 2 and 4 p. m.

Beginning on Sunday, August 10, there will be services every Sunday evening at St. Mary's Church at about 7.30 o'clock. This service will begin after the arrival of the 7 o'clock train from Panama. There will be a celebration of the Holy Communion at Culebra on Sunday, August 17, and, thereafter, on the third Sunday in each month at 7 a. m. This service will be held in the Commission chapel.

The subject of the meeting of the young people's society of the Cristobal Union Church on Sunday evening, July 27, was "Missionary essentials," and the following program was carried out: Reading, "Japanese babies," by Miss Julia Nelson; paper, "Dr. Eleanor Chestnut, missionary," by Miss Louise Still-

son; paper, "A Chinese mob," by Miss Sara Harrison; "Some Philippine experiences," by Miss Richmond; paper, "John Eliot, an apostle to the Indians," by Miss Easter Rogers. A debate was also held between the pastor, the Rev. Carl H. Elliott, and Mr. DeLong on the subject, "Resolved, that home missions are more important to the Christian church of America than foreign missions."

Sailing of the "Ancon."

The sailing date of the steamer *Ancon* has been set for Saturday, August 9, at 3 p. m., from pier No. 11, Cristobal.

Informal dances will be held on August 7 and 21 at the Strangers Club, Colon.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, August 2, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela	Gamboa.	Gatun Lake.
Sun., July 27.....	132.6	97.1	54.0	53.6
Mon., July 28.....	130.1	96.4	54.0	53.9
Tues., July 29.....	127.0	93.3	54.0	54.0
Wed., July 30.....	132.0	96.4	54.5	54.2
Thurs., July 31.....	128.0	94.4	54.4	54.3
Fri., August 1.....	126.4	92.8	54.5	54.4
Sat., August 2.....	126.1	92.6	54.6	54.5
Height of low water to nearest foot.....	125.0	91.0	44.0	

*Sluice gates in spillway of Gatun Dam were closed on June 27, 1913, with lake at elevation 48.25.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending August 16, 1913:

DATE.	High		Low		High
	A.M.	A.M.	A.M.	P.M.	P.M.
Aug. 10.....	3.28	9.35	4.06	10.18	
Aug. 11.....	4.33	10.41	5.15	11.37	
Aug. 12.....	5.46	11.58	6.27		
Aug. 13.....	12.58	7.00	1.12	7.33	
Aug. 14.....	2.06	8.03	2.15	8.28	
Aug. 15.....	2.58	8.57	3.07	9.17	
Aug. 16.....	3.40	9.42	3.50	9.58	

75th meridian time.

Misdirected Letters.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Bain, Patterson, Jr.	Horgan, Matthew W.
Barrett, Mrs. E.	Kaiser, W. F.
Blanton, Jake	Kobely, J. C.
Bohnhorst, Henry	La Forve, Dr. A. de
Bonds, Mrs. Milton	Mason, W. Harrison
Callam, Mrs. Julia	Matthew, Alfred
Carrington, Evans	McKay, Guillermo
Costley, Percy	McKenzie, Alex.
Edmunds, Robert G.	Michie, E. M.
Fisher, A. J.	Miller, Adam
Fassali, Capt. Doloras	Mitchell, James
Flake, C. L.	Nadio, Mrs. Ed
Fletcher, Joseph	Pearsall, Clarence C.
Forde, Donald	Schute, Chas.
Gettes, All	Scott, Ernest A.
Hewitt, H. A.	Spickelmire, Vernon
Hodge, C. G.	Thompson, C. G.

LETTERS UNCALLED FOR JULY 30.

Burnett, Claude	Monahan, John
Burns, B. M.	Murphy, J. C. (book)
Charney, T. Larkins	Newball, Michael H.
Coombs, Ferdinand	Newhard, Samuel W.
Felton, Joe	Parker, W. E.
Gardner, Clifford	Rahtean, Ed
Garrett, B. C.	Sawyer, Frank, M.
Garvin, James F., Jr.	Simon, Carrol (printed matter)
Grinder, Mrs. J. C.	Slonaker, C. E.
Hannon, Timothy M.	Snow, Percy E. (4)
Hiscock, W. P.	Stress, Fred
Hoagland, R. C.	Thomas, Mrs. Walter J.
Hoffner, Herbert R.	Wayne, James
Hurst, Mrs. J. W.	Wilkie, Samuel G.
Kennedy, E. J.	Wilson, E. R.
Lewis, Mrs. Al	Young, Miss Anna
Markhaus, A.	

STATIONS	1911	1912	1913	Station Av.	Years of record	Rail days 1913
<i>Pacific Section—</i>						
Ancon.....	5.78	10.25	4.85	7.97	17	22
Balboa.....	7.12	9.76	4.22	9.50	15	17
Miraflores.....	6.83	8.37	5.41	8.44	5	24
Pedro Miguel.....	6.36	11.54	6.80	8.73	6	22
Rio Grande.....	7.00	9.11	5.74	10.45	9	23
<i>Central Section—</i>						
Culebra.....	5.95	10.12	5.52	9.34	22	22
Camacho.....	6.62	10.87	4.01	9.89	7	23
Empire.....	4.00	9.15	4.87	8.83	9	21
Gambou.....	7.26	14.27	8.06	10.37	33	18
Juan Mina.....	8.47	9.96	6.99	8.47	3	19
Alhajuela.....	8.84	10.17	6.99	12.81	15	18
El Vigia.....	8.76	13.95	6.32	11.66	5	20
Gorgona.....	6.45	10.46	6.01	10.69	10	22
Finolés.....		9.87	6.52	8.20	2	22
Trinidad.....	3.63	11.80	8.36	9.32	6	30
Monte Lirio.....	10.58	11.60	8.70	13.23	6	18
<i>Atlantic Section—</i>						
Gatun.....	6.66	11.84	9.73	12.08	8	24
Brazos Brook.....	14.04	16.85	11.51	16.21	8	30
Colon.....	14.58	13.13	15.13	16.35	43	24
Porto Bello.....	14.48	24.21	20.83	19.77	6	30

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

An athletic and aquatic meet will be held on Labor Day, Monday, September 1, at Corozal, under the supervision of the Y. M. C. A. clubhouses. Since the Fourth of July meet at Cristobal, athletic and aquatic enthusiasts have made requests for another meet in the near future. Labor Day has been chosen as the best time, as it will enable many men to participate, who, through the coming reduction in the forces along the Canal will later be unable to take part in such a meet. This probably will be the last meet for many of the men, and, consequently, it is hoped to make it the largest occasion of its kind ever held on the Isthmus.

The athletic events will be held in the morning and will consist of the following:

Track events—100-yard dash; 220-yard dash; 440-yard run; 100-yard low hurdles; fat men's race; three-legged race.

Field events—Running broad jump; running high jump; 12-pound shot put; pole vault; tug-of-war.

Boys' events—60-yard dash; relay race.

The aquatic events will be held in the afternoon, and will comprise the following: 50-yard swim, 100-yard swim, one-mile swim, fancy diving, equipment race, relay race, half-mile canoe race, canoe tilting, canoe obstacle race for the men, and a 50-yard swim for the boys.

The entry fees will be 50 cents for the first event, and 25 cents for each additional event for the men, and 25 cents for each event for the boys. Entry blanks will be printed within the next few days and can then be obtained from the local Y. M. C. A., or the quartermaster's office.

The meet is open to all gold employees and members of the Tenth Infantry and Marine Corps. Any additional information may be procured from R. L. Dvelle, secretary of the Corozal Y. M. C. A., to whom the entries should be forwarded.

The moving picture schedule for the week August 11 to 16 is, as follows: Monday, Gatun; Tuesday, Corozal; Wednesday, Culebra; Thursday, Cristobal; Friday, Empire and Porto Bello. The titles of the films to be shown are, as follows: "She cried," "Buster in Nodland—double courtship," "Joker's mistake," "Too much wooing of handsome Dan," "Unexpected fortune," "Loafer's mother," "Broncho Bill's pal."

COROZAL.

At the moving picture show on Friday night, Mr. and Mrs. Geo. R. D. Kramer, Jr., furnished music.

High scores in bowling for the week were, as follows: *Bigpins*—Garrett, 211. *Duckpins*—Beall, 116; Kent, 110.

Twenty-one men have entered the local handicap tenpin bowling tournament which will run through the month of August. A gold medal will be given to the man who makes the highest average.

CULEBRA.

Next Sunday evening at 7.30, in place of the usual song service, Mr. S. P. Verner of Cristobal will give an address, on "The man who came back."

High scores in tenpins recently made are, as follows: Tragsdorf, 206; Dougherty, 213; Leonard, 217; Hobbs, 217.

A two-man bowling tournament will be started August 11. In this plan, each man will bowl every other man two games, the pair making the highest score for the four games rolled receiving gold medals. If sufficient entries are received, the one making the highest average, and the one making the highest single score will receive gold medals. The entry fee is \$1. All desiring to enter are requested to sign the conditions posted on the bulletin board.

In the local handicap tenpin bowling tournament just closed the winners of the medals were B. A. Armstrong and G. J. Finley.

An order for library books will be sent to the United States very soon. Those desiring any special books may hand the titles of same to the librarian.

EMPIRE.

The local tenpin tournament closed on August 1. The highest single score was 230, made by Mr. Arnold. Mr. Johnson and Mr. Gilmore won the doubles. Thirty-two men participated in this tournament. The entry list is up for another tenpin tournament. Entries close this week.

The Corozal chess team played the Empire men on Saturday, August 2. Corozal won all but one game. Some of the Empire players were unable to play in this match. The Culebra chess team will be at Empire on Friday evening, August 8.

Two Spanish classes for beginners have started. One class meets on Tuesday and Thursday evenings at 8.30 o'clock, and the other on Wednesday and Friday mornings, at 8.30. It is not too late to enroll now.

Posters are out for the athletic and aquatic meet to be

held on Labor Day at Corozal. All interested should see Mr. Kussell at once.

The Empire "American" duckpin team, which was tied with the Cristobal team for first place, will bowl the Cristobal team on the Gatun alleys on Saturday, August 9.

GORGONA.

The clubhouse at Gorgona was closed on August 1. It will be torn down and reerected at Pedro Miguel.

GATUN.

Mr. P. T. Woolworth, who has been assistant secretary and physical director here since August, 1912, has taken up his duties as secretary of the Porto Bello Y. M. C. A., effective August 1. Mr. George W. Watson, formerly assistant secretary at Gorgona, will serve as assistant secretary and physical director, temporarily.

The "Lock City" duckpin tournament, which started on July 17, was brought to a close on Thursday evening, July 31, when the "Field" took two out of three games from the "Bitumastics" and the "First Division" won three games from the "Office" team.

The final standing of the teams is, as follows:

McClintic-Marshall Field.....	11	4	.....	733
First Division.....	10	5	.....	666
Atlantic Division.....	9	6	.....	600
McClintic-Marshall Office.....	8	7	.....	533
Lock gate inspectors.....	5	10	.....	333
Amer. Bit. Enamel Company.....	2	13	.....	133

The names of the players on the McClintic-Marshall Field team, which won first prize (gold medals) are, as follows: W. B. Childers, captain; M. Conley, L. Harper, S. M. Bellinger, D. C. Galloway, J. A. Tucker.

The First Division, which took second prize (silver medals), was composed of F. N. Easter, captain; H. H. Hodges, O. E. Matter, E. L. Grover, W. J. Humphreys, C. P. Gray.

The Atlantic Division, winning bronze medals as third prize, consisted of G. A. Barte, captain; W. A. Wells, E. T. Gilbert, A. J. Coleman, G. T. Dennis, W. H. Brown.

S. M. Bellinger won a silver medal for high single game, 132 pins. Chas. C. G. Wurster had the highest average for the tournament, 92.4, and received a silver medal.

The ten men who stood highest in average were:

Wurster.....	92.40	Barte.....	88.40
Wells.....	90.11	Bellinger.....	88.30
Grover.....	90.60	Matter.....	87.14
Claherty.....	89.11	Hess.....	87.11
Hodges.....	88.70	Humphreys.....	87.40

Mr. Frank Johnson, bass, sang a solo at the motion picture entertainment on Saturday evening, August 2. Mrs. Gilbert was accompanist, and played several solos.

The membership of the Gatun Y. M. C. A. on August 1 was 405, an increase of four over last month. The number of bowling games was 3,369, which established a new record for the last three years. There were 5,098 pool games.

A concert was given by the orchestra from the *Prinz August Wilhelm* of the Hamburg-American steamship line, on Tuesday evening, July 29. Mr. C. C. Pearsall also gave several piano solos.

CRISTOBAL.

Señor R. Diez de la Cortina, an author of language text books, was the guest of Señor J. B. Gomez, instructor of the Y. M. C. A. Spanish classes, Monday night, July 28. The classroom was filled to capacity to hear the lecture and exhibition lesson given by Señor Cortina.

A progress pool tournament was held on Wednesday, July 30. Eight contestants participated. Mr. Joseph Burgoon won the tournament by seven points, by pocketing 207 balls in 60 minutes. All five tables have been recovered in the past 30 days, and much interest in pool and billiards is manifested at present.

All four of the bowling alleys are again in operation, two of the alleys having been closed for repairs. A local pool tournament will be started about August 12. All persons wishing to enter the tournament are requested to leave their names with the manager of the alleys not later than August 9.

In consideration of the departure of Mr. and Mrs. Burrell for the United States, a farewell married folks, duckpin tournament was held on Saturday, July 26. Mr. and Mrs. Charles Cotton won the tournament with a total score of 511, and will receive a gold medal as a prize.

Commissary Cold Storage.

No material changes have been made in the prices of cold storage articles sold at the commissaries since last week.

Auction of Hogs at Ancon Hospital Dairy.

ANCON, C. Z., July 23, 1913.

There will be sold at public auction at the Ancon Hospital dairy, Saturday morning August 23, at 10 o'clock, five hogs (barrows) for hutchering.

The right to reject any and all bids is reserved.

CHAS. F. MASON,
Superintendent.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Panama.....	P. R. R.	Friday.....	Aug. 1
Allianca.....	P. R. R.	Thursday.....	Aug. 7
Colon.....	P. R. R.	Tuesday.....	Aug. 12
Advance.....	P. R. R.	Tuesday.....	Aug. 19
Panama.....	P. R. R.	Monday.....	Aug. 25
Allianca.....	P. R. R.	Saturday.....	Aug. 30
Colon.....	P. R. R.	Saturday.....	Sept. 6
Advance.....	P. R. R.	Friday.....	Sept. 12
Panama.....	P. R. R.	Thursday.....	Sept. 18
Allianca.....	P. R. R.	Wednesday.....	Sept. 24
Colon.....	P. R. R.	Tuesday.....	Sept. 30

CRISTOBAL TO NEW YORK.

Advance.....	P. R. R.	Thursday.....	Aug. 7
Panama.....	P. R. R.	Wednesday.....	Aug. 13
Allianca.....	P. R. R.	Tuesday.....	Aug. 19
Colon.....	P. R. R.	Sunday.....	Aug. 24
Advance.....	P. R. R.	Sunday.....	Aug. 31
Panama.....	P. R. R.	Saturday.....	Sept. 6
Allianca.....	P. R. R.	Thursday.....	Sept. 11
Colon.....	P. R. R.	Thursday.....	Sept. 18
Advance.....	P. R. R.	Wednesday.....	Sept. 24
Panama.....	P. R. R.	Tuesday.....	Sept. 30

NEW YORK TO COLON.

Almirante.....	U. F. C.	Wednesday.....	July 30
Prinz Joachim.....	H. A.	Saturday.....	Aug. 2
Carrillo.....	U. F. C.	Saturday.....	Aug. 2
Danube.....	R. M.	Saturday.....	Aug. 2
Santa Marta.....	U. F. C.	Wednesday.....	Aug. 6
Pastores.....	U. F. C.	Saturday.....	Aug. 9
Carl Schurz.....	H. A.	Saturday.....	Aug. 9
Metapan.....	U. F. C.	Wednesday.....	Aug. 13
Prinz August Wilhelm.....	H. A.	Saturday.....	Aug. 16
Tivives.....	U. F. C.	Saturday.....	Aug. 16
Tagus.....	R. M.	Saturday.....	Aug. 16
Zacapa.....	U. F. C.	Wednesday.....	Aug. 20
Emil L. Boas.....	H. A.	Saturday.....	Aug. 23
Sixaola.....	U. F. C.	Saturday.....	Aug. 23
Almarante.....	U. F. C.	Wednesday.....	Aug. 27

COLON TO NEW YORK.

Zacapa.....	U. F. C.	Thursday.....	Aug. 7
Emil L. Boas.....	H. A.	Tuesday.....	Aug. 12
Sixaola.....	U. F. C.	Tuesday.....	Aug. 12
Almirante.....	U. F. C.	Thursday.....	Aug. 14
Prinz Joachim.....	H. A.	Tuesday.....	Aug. 19
Carrillo.....	U. F. C.	Tuesday.....	Aug. 19
Oruba.....	R. M.	Tuesday.....	Aug. 19
Santa Marta.....	U. F. C.	Thursday.....	Aug. 21
Carl Schurz.....	H. A.	Tuesday.....	Aug. 26
Pastores.....	U. F. C.	Tuesday.....	Aug. 26
Metapan.....	U. F. C.	Thursday.....	Aug. 28
Prinz August Wilhelm.....	H. A.	Tuesday.....	Sept. 2
Tivives.....	U. F. C.	Tuesday.....	Sept. 2
Trent.....	R. M.	Tuesday.....	Sept. 2
Zacapa.....	U. F. C.	Thursday.....	Sept. 4
Emil L. Boas.....	H. A.	Tuesday.....	Sept. 9
Sixaola.....	U. F. C.	Tuesday.....	Sept. 9

NEW ORLEANS TO COLON.

Turrialba.....	U. F. C.	Saturday.....	Aug. 2
Cartago.....	U. F. C.	Wednesday.....	Aug. 6
Abangarez.....	U. F. C.	Saturday.....	Aug. 9
Heredia.....	U. F. C.	Wednesday.....	Aug. 13
Atenas.....	U. F. C.	Saturday.....	Aug. 16
Parismina.....	U. F. C.	Wednesday.....	Aug. 20
Turrialba.....	U. F. C.	Saturday.....	Aug. 23

COLON TO NEW ORLEANS.

Atenas.....	U. F. C.	Thursday.....	Aug. 7
Parismina.....	U. F. C.	Saturday.....	Aug. 9
Turrialba.....	U. F. C.	Thursday.....	Aug. 14
Cartago.....	U. F. C.	Saturday.....	Aug. 16
Abangarez.....	U. F. C.	Thursday.....	Aug. 21
Heredia.....	U. F. C.	Saturday.....	Aug. 23

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays at 3 p. m.; ships for New York via Kingston, on Tuesdays at 1.30 p. m. and Thursdays at 1.30 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct, Tuesdays at 3 p. m.

Hamburg-American steamers sail for New York, via Kingston and Santiago de Cuba, on Tuesdays, the *Prinz Joachim* and *Prinz August Wilhelm* at 10 a. m., and the *Emil L. Boas* and *Carl Schurz* at 2 p. m.

LOST—Probably in Hotel Washington, fraternity signet ring, having Maltese cross with skull and bones. Reward, if returned to Spencer C. King, Empire.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, AUGUST 13, 1913.

No. 51.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is published free of charge, one copy each to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications,

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Organization for Work of Landscape Architect.

The organization in connection with the town work, other than building, at Balboa, has been approved, and includes a landscape architect, junior engineer, transitman, two rodmen, two draftsmen, one general foreman, three subforemen, and 300 silver laborers. All of the above force will be carried on the organization chart of the Second Division.

From Miraflores Locks to the Sea.

The Canal prism south of Miraflores Locks, extending about 5,000 feet from the lower guard gates to the dike, will be flooded about August 25, and the subsequent removal of the dike will open a sea water channel from the Pacific ocean to the locks. The number of steamshovels in the prism has recently been reduced from eight to four; these are completing the channel to a width of 500 feet at a depth of 45 feet below mean tide level, and will finish their work about August 20. The lower guard gates are to be completed and closed about August 15.

The prism will be filled with water from the Rio Grande diversion, turned in from the east side. It is estimated that the filling will take about five days, and after the water has risen to slightly below sealevel the dike will be removed. About this there will be little that is spectacular; the north toe of the dike, from 20 to 45 feet under water, will be shattered by blasting, for which a fleet of tripod drills is now preparing, but the upper part of the dike is a relatively soft fill of earth and rock which will not need to be blasted. The ladder dredges *Mole* and *Corozal*, which are now at work close to the sea side of the barrier, will proceed against it. Only a few days will be consumed in cutting a channel which will pass the dredges and other vessels of similar draft, though cleaning the channel to full depth and width at this point will require a month or more.

The destruction of the dike will compel the removal of the tracks across it, connecting

with those on the west side of the locks. The only access to the west side will then be by the tracks across the lower end of Miraflores Lake, just north of the upper approach wall of the locks. These tracks will have to be abandoned when it is decided to fill the lake; accordingly, the various items of plant and equipment on the west side are being removed as rapidly as their services can be dispensed with.

Canal Visitors.

The Quarantine Service has prepared an estimate of the number of tourists that visited the Isthmus during the years 1910, 1911, 1912, and the first six months of 1913. It is based on the records of "transit" passengers, 85 per cent of whom, it is believed, come to the Isthmus for the purpose of seeing the Canal. A statement of "transit" passengers during the abovementioned period, divided between Canal visitors, and through passengers, follows:

YEAR.	Canal visitors.	Others.	Total.
1910.....	12,316	2,174	14,490
1911.....	15,790	2,787	18,577
1912.....	20,946	3,697	24,643
1913 (six months).....	18,972	3,348	22,320
Total.....	68,024	12,006	80,030

During 1910, five tourist steamers and private yachts arrived at the ports of Colon and Cristobal, with a total of 1,199 passengers. In 1911, there were seven vessels of this class, with a total of 1,682 passengers. In 1912, the number of vessels had increased to 12, with a total of 3,781 passengers, and for the first six months of 1913, there was a total of 37 vessels carrying 8,708 passengers.

Since January, 1912, the number of tourist passengers arriving on the Isthmus at the port of Ancon has been approximately 100 a month. There has been only one special tourist steamer on the Pacific side during that time, namely, in May, 1912, with 186 passengers.

Reports received at some of the local steamship offices on the Atlantic side indicate that the tourist travel during the coming dry season will exceed all previous records.

Nine Killed at Porto Bello Quarry.

A large slide of rock occurred on the upper level of the quarry at Porto Bello at 10.45 a. m., on Saturday, August 9, causing the death of nine men, and injuring five others. The only American employe killed was Charles A. Nylen, employed as a steamshovel engineer. The names of the others are: Charles Husband, West Indian, pitman, check No. 173903; Alex Clark, West Indian, fireman, check No. 100974; José Nicholas, alias Hilarie Louis, Martiniquan, check No. 145008; James Brown, West Indian, pitman, check No. 145198; Uriah Williams, West Indian, laborer, check No. 107650; George Ellis, West Indian, laborer, check No. 102808;

George Forde, Barbadian, laborer, check No. 102667, and Marcus Perez, Panamanian, laborer, check No. 145176.

Among the injured was Jacob A. Hake, craneman on steamshovel No. 266, who was sent to Colon Hospital for treatment. None of the injured is seriously hurt, and only two were sent to the hospital.

Steamshovel No. 266, which was working directly below where the slide occurred, was completely demolished.

Mr. Nylen was a naturalized American, 43 years of age, and had been on the Isthmus since June 6, 1908. He is survived by his wife and one child, who live at Porto Bello. He came to the Isthmus from Woodbridge, Virginia.

Raising Relocated Railroad Across Lake Area.

Forces of the Panama railroad are engaged in raising to final height the embankments of the relocated line across the Brazos and Quebrancha bottoms, in the Gatun River valley. The construction of the "high line" across this valley necessitated building high embankments across semiswampy areas between hills. As the ground rock was from 150 to 200 feet below the surface, and surmounted by a stratum, about a hundred feet thick, of soft clay, mixed with decomposed vegetable matter and sand, under a surface layer of fairly firm clay, the construction of embankments to the necessary height of from 60 to 71 feet above the surface, was fraught with difficulties. Pile trestles about 30 feet high were extended from the hills, and after the fill had been made to the height of the trestles the embankment was carried up by steps, the dumping tracks being lifted by trackshifters, much as in the construction of the toes of Gatun Dam. The increasing weight of spoil, however, caused the soft bottom to give away, and to bulge up beyond the edges of the fill. This necessitated increasing the width of the dump to distribute the pressure; in consequence, the four embankments across the valley, with an aggregate length of only three miles, have required approximately 5,000,000 cubic yards of filling, an average of about 1,660,000 cubic yards per mile. The sliding on the Brazos and Quebrancha fills was so heavy that up to the time the line was opened to regular traffic, in February, 1912, the embankments had been raised only to 89 feet above sealevel, three feet lower than final elevation. Except for occasional fills to keep the track even, they have been left thus for a year and a half, that they might settle into greater stability.

Since the line has been in service this settling has lowered the track from one to two feet, so that the present work involves raising the roadbed about five feet. The bottom has been holding satisfactorily and does not appear to be affected by the rise of the lake. The present procedure involves raising one side of the embankment to the desired height

and laying a temporary spur on it, over which trains can make about 15 miles an hour, while the rest of the bank is brought to final level. The completed fill is to be 40 feet wide at the top, at 92 feet above sealevel. The width at bottom is determined by the conditions at each point; in general, the slope of the completed embankments is about one on four.

Material for this filling is supplied from steamshovel excavation in a borrow pit near Quebrancha siding. About 75,000 cubic yards of spoil will be used on the Brazos fill, and about half that quantity on a stretch of about 2,000 feet just north of Quebrancha. The relaid track will finally be ballasted with gravel dredged from the Chagres river.

Concrete Work in Locks and Spillways.

Concrete work in the Canal locks is nearly completed, the aggregate amount in place at the close of work on August 9, being 4,475,402 cubic yards.

A statement of the concrete laid in the three sets of locks for the Canal, and in Gatun and Miraflores spillways, as of August 9, follows:

GATUN LOCKS.		Concrete laid, Cubic yards.
Aug. 4.....		148
Aug. 5.....		168
Aug. 6.....		186
Aug. 7.....		150
Aug. 8.....		190
Aug. 9.....		126
Total.....		968
Previously reported.....		2,043,761
Grand total.....		2,044,729
PEDRO MIGUEL LOCK.		
Aug. 3.....		28
Aug. 4.....		26
Aug. 5.....		65
Aug. 6.....		124
Aug. 7.....		85
Aug. 8.....		155
Aug. 9.....		86
Total.....		569
Previously reported.....		922,246
Grand total.....		922,815
MIRAFLORES LOCKS.		
Aug. 3.....		42
Aug. 4.....		141
Aug. 5.....		167
Aug. 6.....		151
Aug. 7.....		203
Aug. 8.....		163
Aug. 9.....		132
Total.....		999
Previously reported.....		1,506,769
Grand total.....		1,507,768
GATUN SPILLWAY.*		
Aug. 4.....		62
Aug. 5.....		96
Aug. 6.....		90
Aug. 7.....		188
Aug. 8.....		132
Aug. 9.....		100
Total.....		668
Previously reported.....		231,304
Grand total.....		231,972
MIRAFLORES SPILLWAY.		
Aug. 4.....		166
Aug. 5.....		128
Aug. 6.....		120
Aug. 7.....		76
Aug. 8.....		108
Aug. 9.....		126
Total.....		724
Previously reported.....		73,562
Grand total.....		74,286

*Includes hydroelectric station.

Missing Man.

Any one having information regarding the whereabouts of Dr. Albert Friedman, formerly of Chicago, Ill., who is supposed to be on the Isthmus, is requested to communicate with the American Legation, Panama.

SOCIAL LIFE OF THE ZONE.

Masons' Banquet.

As a social feature in connection with the visit of the delegation of the Grand Consistory of the State of Louisiana, a banquet was held at the Hotel Washington, Colon, on Saturday evening, August 9. It was attended by 212 Masons and their families and friends. The Marine band played during the evening, and the young people enjoyed dancing both before and after the supper. The toasts were drunk in water, according to the rules of Scottish Rites Masonry. The speakers were Messrs. Ben Jenkins, W. E. Parker, Harry C. Ragsdale, George R. Brouwer, and William B. Childers; Mr. Gerald Bliss was toastmaster. A roll of thirty-second degree Masons was called, 53 answering. At the roll call by States, it was found that 27 States were represented, as well as the District of Columbia, and the Republic of Panama.

During the evening, a wireless message was received from the chairman of the delegation of the Grand Consistory, Mr. Levy, on board the steamer *Aienas*, expressing the good wishes of the party, to which the committee sent an appropriate reply.

Church Notes.

The Union Church of Cristobal held its semiannual business meeting in the chapel on Sunday evening, August 3, when the reports showed the status of the work to be, as follows: The church membership is 119; 24 members were admitted between January and June. The total expenditures for church work and other purposes were \$458.93. The Sunday school has an enrollment of 284, and the young people's society of 50. This last named society has sent \$25 to the relief of a minister in Bulgaria, a classmate of the Rev. Carl H. Elliott. The finances of the church, where this minister is laboring, have become seriously affected by the war.

Work on the new Methodist church in the Guachapali district, Panama, is in progress, and the minister expects to dedicate the building early in September. The church will be operated in connection with the Methodist Episcopal Church in Panama, and will be under the direction of the pastor of that church, the Rev. Harry Compton.

The bulletin entitled *Union Church Work*, which is published semimonthly in the interest of Christian endeavor, is delivered to quarters occupied by employes on the "gold roll" in Colon, Cristobal, and Las Cascadas. Its circulation is 1,300.

The Rev. Alfred B. DeRoos, the evangelist whose mission in the Baptist churches was completed in June, has returned to the Isthmus from Costa Rica, and is conducting a series of meetings in the Commission chapel at Empire, under the direction of the Rev. J. L. Wise. The mission will continue two weeks, and following it, Mr. DeRoos will conduct a similar series of evangelistic meetings at Corozal. The church work in Corozal has been taken over by the Rev. Mr. Wise.

Salvation Army Transfers.

Staff Captain George Victor Catlin of Colon, head of the Salvation Army in Panama, has been relieved from the post at his request, and will sail for New York on the *Tagus*, accompanied by Mrs. Catlin, on August 26. He will be succeeded by Staff Captain Bennett, who comes from Demerara,

where he has been stationed for the past five years. Staff Captain Catlin came to the Isthmus in March, 1910, succeeding Adjutant Watson. In the Colon fire of March 23, 1911, when the Salvation Army Institute was destroyed, the officers lost everything they had. For a time they lived in an army tent, furnished by the Quartermaster's Department, and carried on such work as was possible in the limited space at their disposal. In August, 1911, the present two-story building, erected by the Canal Commission on Government land, was opened. Adjutant Fillmore Watson, and Mrs. Watson, who were the chiefs of the local branch of the army from 1908 to 1910, have been assigned to a corps in Canada.

Lodge Notes.

The official roster of the Pythian Sisters is, as follows: Most excellent chief, Mrs. Annie Wilson, Las Cascadas; excellent senior, Mrs. Therese Blake, Empire; excellent junior, Mrs. May Jordan, Pedro Miguel; manager of the temple, Mrs. Susie Reese, Las Cascadas; protector, and guard, of the temple, Mrs. Hannah Smith, Empire, and Mrs. Mary Wagner, Culebra, respectively. The auxiliary will continue to meet at the lodge hall at Las Cascadas on the first and third Thursday afternoons in each month.

The Uniformed Rank, Knights of Pythias, held a dance in the lodge hall at Las Cascadas, on Friday evening, August 8.

Local No. 19, International Brotherhood of Steamshovel and Dredgemen, will hold its next meeting at the Empire lodge hall on Sunday, August 17, at 12.15 p. m. All members are requested to attend.

An informal dance was held in the Pedro Miguel social hall on Saturday evening, August 9.

Sojourners Lodge, A. F. and A. M.

Members of Sojourners Lodge, A. F. and A. M., are advised that the special communication called for Saturday, August 23, 1913, has been called off, and a special communication will be held on Wednesday, August 20, at which time the degree of F. C. will be conferred upon the E. P. who are called for August 23.

Eli D. Sims, W. M.

Cristobal, C. Z., August 11, 1913.

United Spanish War Veterans.

Chagres Camp will hold a meeting and entertainment in the lodge hall at Gatun, on Saturday, August 16, at 8 p. m.

Married.

BENTON-SMITH—At the Union Church, Cristobal, on August 12, Caroline Edna Smith, of Truro, Nova Scotia, to Henry Linden Benton, of Columbus, Georgia, the Rev. Carl H. Elliott officiating. Canal Zone residence, Cristobal.

FORSTROM-BERRY—At the Union Church, Cristobal, on August 7, Miss Jessie Ritchie Berry of Providence, Rhode Island, to Mr. Albin Bortel Forstrom of New York City, the Rev. Carl H. Elliott officiating. Canal Zone residence, Gatun.

MARSH-DEVINS—On Sunday, July 20, Mary Louise Devins to William H. Marsh, both of Plattsburg, N. Y., at St. Johns Church, Plattsburg, Rev. J. H. Driscoll, D. D., D. C. L., officiating. Canal Zone residence, Cristobal.

DRENNEN-SARVEY—On July 3, at Ancon, Miss Hattie E. Sarvey of Pedro Miguel, to Mr. John W. C. Drennen of Gatun, the Rev. Harry Compton officiating.

SANGER-CARRERA—In the Cristobal Union Church, on Monday, July 28, Miss Hecelia Carrera of Colon, to Mr. Victor Sanger of Rochester, N. Y., the Rev. Carl H. Elliott officiating.

JOINT LAND COMMISSION.

Additional Awards.

The following additional awards were announced by the Joint Land Commission at a public session held on Monday, August 11:

Award No. 16. *In the matter of certain claims for houses in the town of Gorgona*—To the following owners of buildings, for the settlement of all rights, claims or other interests which they may have in the same, together with any other improvements on the lots with houses designated by their tax numbers, as follows: Ricardo Arias, a total of \$2,680 for individual houses, as follows: Tax No. 717, \$1,300; Tax No. 764, \$730; tax No. 796, \$500; tax No. 843, \$450; George Bailey, \$160; Saturnina Barsallo, \$1,200; Josefina Berguido, for her one-half interest in house No. 715, \$225; estate of Manuel Berry, \$450; Isabela Berry, \$80; L. B. Bolton, for his one-half interest in house No. 706, \$500; Biviara (Juliana) Carrera, \$400; James Constance, \$100; J. R. Foley, a total of \$725 for individual houses, as follows: Tax No. 792, \$325; tax No. 794, \$400; Zolitud Gaspar, \$450; Martina Gonzalez, \$65; Juan Antonio Henriquez, for his one-half interest in house No. 715, \$225; Amelie Hipolite, \$540; J. M. Hyatt, for his one-half interest in house No. 833, \$750; Matthew Makling, \$40; Pedro Pampul Lindor, \$100; Euphemia Meame a total of \$185 for individual houses, as follows: Tax No. 725, \$65; tax No. 800, \$120; Rene Mederick, \$210; heirs of Charles Nelson, \$160; Juan Paredes, \$3,500; David Penso, for his one-half interest in house No. 706, \$500; Faustina del Rio, \$400; Dario Rodriguez, \$300; Dario Rodriguez, for his one-half interest in house No. 819, \$450; Dario Rodriguez, for his one-half interest in house No. 820, \$100; Florentina Rodriguez, \$60; Belisario Roncero, for his one-half interest in house No. 819, \$450; Belisario Roncero, for his one-half interest in house No. 820, \$100; Stanley S. Ross, for his one-half interest in house No. 833, \$750; Jacinto Sanchez, \$1,050; Chong Sifa, \$1,400; Carolina Tejada, \$300; Alexander Wood, \$500. Total \$19,045.

Award No. 17. *In the matter of certain claims for houses in the town of Gorgona*—To the following owners of improvements of every kind, and all other rights and claims in land located as above described: Encarnacion Antipara, \$120; estate of H. Barsallo, \$265; Carlos Carbone, a total of \$2,700 for individual houses, as follows: Tax No. 703, \$500; tax No. 709, \$850; tax No. 723, \$800; tax No. 724, \$550; Ernestina Caranza, a total of \$1,520 for individual houses, as follows: Tax No. 827, \$1,300; tax No. 828, \$220; Edward Douglas, a total of \$530, for individual houses, as follows: Tax No. 846, \$300; tax No. 847, \$230; Francisca Hernandez, a total of \$875, for individual houses, as follows: Tax No. 744, \$275; tax No. 758, \$600; Rosa Junco, \$140; Rafael Maestre, a total of \$3,890, for individual houses, as follows: Tax No. 739, \$2,500; tax No. 740, \$315; tax No. 741, \$500; tax No. 778, \$450; tax No. 782, \$125, (this award is subject to such equities, if any, as may be possessed by third parties, and it is ordered that the amount of this award be deposited in the Circuit Court of the Second Judicial District at Empire for distribution in accordance with the terms of this award;) Manuel Menesis, \$360; Marco Antonio Posada, for his one-half interest in house No. 768, \$180; Tomas Posada, for his one-half interest in house No. 768, \$180; Diego Manuel Sanchez, a total of \$1,080, for individual houses, as follows: Tax No. 722, \$550; tax No. 726, \$65; tax No. 727, \$65; tax No. 761, \$400. Total, \$11,840.

Award No. 18. *In the matter of various claims, located as below designated:*

A. Improvements on the estate of Mamey y Culo Seco, right (east) bank of the Chagres—Emanuel Jose Puison, \$30; Santiago Rangel, \$150.

B. Improvements on the estate of Bailamonos Sur—John Badis, \$75; Robert Duncan, \$40; Joseph Farquhar, \$40; Bernardo Ruiz, \$60; Edward Samuels, \$25.

C. Improvements on the estate of Juan Grande—Carlos Campo, \$10; Roberto Campo, \$10; Magdalena Campo, \$10; Antonia Campo, \$10; Manuel Campo, \$10; Juan Moreno, \$10, the above being joint owners of a finca on the Caribali watershed: Nivnor Chavez, \$100; Frederick Mitchell (excluding value of repairs made to his house under terms of special building permit issued to him), \$100; Martin Rodriguez, \$200.

D. Improvements in the area comprised between Gatun and Gamboa, east of the Canal prism—Henry Wildes, \$35.

E. Improvements on the land of Caño Quebrado—Jose Espiritu Gomez, \$100. Total \$1,015.

Rule of Dismissal

In the matter of certain claims for houses in the town of Gorgona, Docket No. 1250-a, August 9, 1913.—The evidence submitted by certain claimants with re-

spect to claims filed for buildings in the town of Gorgona showed that such persons had entered upon the lots and constructed their buildings after taking out leases from the Isthmian Canal Commission. In the case of Agusta Dunlop, in a decision rendered April 16, 1913, the Commission said:

"We have therefore reached the conclusion that it is not within the province of the Joint Land Commission to take cognizance of claims arising out of the revocation of revocable leases or licenses issued by the Isthmian Canal Commission. Such claims have no organic relation to the grants contained in the Treaty, nor to the international obligation which the United States has agreed to discharge under the Treaty; and for the adjudication of all such claims, the claimants must seek a remedy through the procedure afforded by municipal laws."

In accordance with the decision rendered in the case of Agusta Dunlop, the claims of the following persons for the houses upon the lots hereinafter designated by their tax numbers, are dismissed without award: Isabela Berry, tax No. 870; Francis O. Decaille, tax No. 804; Marco Anonio, and Tomas Posada, tax No. 746; Peter Saunders, tax No. 867.

(Signed) FEDERICO BOYD, ROLAND P. FALKNER, SAMUEL LEWIS, L. S. ROWE, Commissioners.

Rule

In the matter of the motion of Counsel for the United States to reconsider the opinion of the Commission overruling the demurrer of the United States to the jurisdiction of the Commission, handed down July 25, 1913. Docket No. 131, August 9, 1913.—The Commission, after giving full consideration to the data submitted by Counsel for the United States requesting reconsideration of the opinion overruling the demurrer entered by Counsel for the United States to the jurisdiction of the Commission in the matter of the claim of Juan Sotillo, has reached the following conclusions:

First.—That the contention of Counsel for the United States with reference to the applicability of law No. 63 of October 20, 1888, and of the provisions of decree No. 906 of the National Executive of Colombia, dated November 22, 1889, passed in pursuance of clause No. 4 of Article 76, and of Article 201 of the constitution of Colombia, is fully disposed of by the fact that on November 6, 1894, a constitutional amendment was passed repealing the abovementioned provisions of the constitution, which constitutional amendment reads, as follows:

"The Congress of Colombia decrees:

Article 1. Article 201 of the constitution and clause 4 of Article 76 are hereby repealed. The general laws of the Republic are hereby made applicable to the Department of Panama.

~In fiscal matters special legislative and executive rules may be prescribed for the Department of Panama."

Second.—The other contentions are fully disposed of by the terms of the Commission's opinion dated July 25, 1913, in the matter of the demurrer to the jurisdiction of the Commission in the case of Juan Sotillo, when taken in connection with the specific provisions of law No. 23 of December 31, 1867, Law No. 149 of 1888, and the amendment to the constitution of Colombia, dated November 6, 1894.

The Joint Commission therefore rules that the data submitted does not furnish any ground for a reconsideration of the opinion overruling the demurrer of Counsel for the United States, to the jurisdiction of the Commission, and an order to this effect is entered accordingly.

(Signed) FEDERICO BOYD, ROLAND P. FALKNER, SAMUEL LEWIS, L. S. ROWE, Commissioners.

Supplementary Memorandum.

After the adoption of the above opinion the Commission received a supplementary memorandum from Counsel for the United States containing the information that Articles 201 of the Colombian constitution and paragraph 4 of Article 76 had been repealed. The supplementary memorandum furthermore states:

"I had not seen Law 41 at the time my memorandum was submitted. I may say, however, that it does not change the views expressed by the counsel for the United States on the fundamental question involved, that is to say, that the lands upon which the town or Gorgona is situated have always been national lands and within the control of the National Government; and the law of 1894 quoted in the opinion of the Commission could only apply to lands in respect to which the National Government had parted with its title in favor of the municipalities."

I might say in addition that it does not follow from the enactment of Law 41 abovementioned that the special laws previously enacted for the Department of Panama were thereby repealed."

The Commission is of opinion that the opinion just announced fully disposes of these contentions, when considered in connection with the original opinion overruling the demurrer.

(Signed) FEDERICO BOYD, ROLAND P. FALKNER, SAMUEL LEWIS, L. S. ROWE, Commissioners.

STEAMSHOVEL RECORDS.

Work of Central Division Shovels during the Month of July.

During the month of July, the total amount of material excavated in the Central Division was 1,057,200 cubic yards, of which 944,300 cubic yards were excavated by Central Division forces and 112,900 cubic yards were removed by sluicing at Gold Hill, the latter work being in charge of Fifth Division of the Chief Engineer's Office. Of the amount removed by the Central Division, 208,831 cubic yards were classified as earth, and 735,469 cubic yards as rock.

Of the total, 1,037,700 cubic yards were primary excavation for the Canal and 19,500 cubic yards were classified as plant excavation. Nine hundred and forty-four thousand, three hundred cubic yards were removed by steamshovels.

The high record for the month was made by shovel No. 262, working 35½ days in the Empire district, which excavated 42,000 cubic yards of rock.

The second best record for the month was made by shovel No. 256, working 36 days in the Empire district, which excavated 39,000 cubic yards of rock.

The best record for a shovel of the 70-ton class was made by shovel No. 109, working 25 days in the Culebra district, which excavated 22,818 cubic yards of earth.

Shovels No. 219 and No. 208, working in the Culebra district, made high records for one day by excavating 2,318 cubic yards of rock, on July 24 and 29, respectively.

Shovel No. 230, working on a 12-hour shift in the Culebra district, made a high record of 3,073 cubic yards of rock, on July 5.

Except where noted, the monthly reports are computed on place measurement, while daily reports are based on car measurements. The best records for the month, and for one day, are shown in the following tables:

BEST RECORDS FOR THE MONTH.
CULEBRA DISTRICT

SHOVEL No.	CUBIC YARDS.			
	Earth.	Rock.	Total.	No. of days at work.
250.....		37,504	37,504	29½
224.....	35,500		35,500	36½
206.....		35,300	35,300	37½

EMPIRE DISTRICT

262.....	42,000	42,000	35½
256.....	39,000	39,000	36
227.....	31,800	31,800	26

BEST RECORDS FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
227	Empire.....	July 18	Rock.....	2,157
227	Empire.....	July 21	Rock.....	1,995
217	Empire.....	July 16	Rock.....	1,932
208	Culebra.....	July 29	Earth.....	2,318
219	Culebra.....	July 24	Rock.....	2,318
219	Culebra.....	July 14	Rock.....	2,180

NOTE.—The excess number of days over and above the actual number of working days in the month of July (25) is due to double shift and night work.

Office of Architect Abolished.

The Canal Commission's office of Mr. A. W. Lord, the New York City architect, who has been employed on plans for the permanent structures of the Canal, was closed August 1, and the office material will be transferred to the Isthmus for use in the office of Mr. M. J. Schiavoni, the assistant architect, at Culebra.

TELEPHONE PAY STATIONS.

Installation Will be Made at Various Central Places in the Zone.

In order to reduce the unofficial use of telephones installed for official business, the Panama Railroad Company will install automatic pay telephones at dock No. 11, dock No. 16 (when completed), building No. 1, Commission clubhouse, and commissary, Cristobal; the gatekeeper's house at Mount Hope cemetery; New Gatun station; Gatun station and clubhouse; Empire station and clubhouse; Culebra station and clubhouse, and the Administration building; Pedro Miguel station; Corozal station and clubhouse; the steel pier at Balboa, and the East Balboa hotel. The telephones cost about \$20 each, and the cost of their installation will be about \$10 each; it is estimated that revenues for the first quarter will about pay for them.

UNDERGROUND CONSTRUCTION, CRISTOBAL.

A 4-duct line has been laid, extending from house No. 80, in which the telephone exchange is situated, for a distance of 625 feet along Roosevelt avenue and over to dock No. 16, thence out along dock No. 16 to a point about opposite building No. 2, where it crosses the avenue to a point between buildings Nos. 1 and 2. Another line extends from the end of dock No. 16 to a point halfway between dock No. 16 and dock No. 17, and will not be carried further until the fill and other work is completed. This conduit line carries one 100-pair telephone cable for distribution on docks Nos. 16 and 17 and telephones in the vicinity of Cristobal Point. It also carries two 3-conductor cambric cables, No. 4, B. and S. gage, one for light, and the other for power, for docks Nos. 15, 16, and 17.

Another duct line has been laid from Roosevelt avenue to the Cristobal Hotel, 200 feet long, to serve the telephones in that part of the settlement. A manhole has been installed opposite house No. 10 for taking care of two ducts to the Panama railroad lots on the water front leased by the United Fruit Company and the Hamburg-American Line for the building of steamship offices, one duct for light, and the other for telephone distribution. Circuits are being arranged in the 100-pair telephone cable for fire alarm telegraph circuits, distributed from a manhole opposite the fire station, which will serve all of the new docks, as well as dock No. 11 at Cristobal Point.

I. C. C. TELEPHONE SERVICE.

The committee on telegraph and telephones appointed by the Chairman to consider and submit recommendations relative to the establishment of a working basis upon which service is to be furnished the Canal Commission has reported, as follows:

1. That the I. C. C. continue to pay a flat rate per month for the operation and maintenance of telephones, but that the term "Maintenance," be considered to cover only repairs and renewals, the ordinary installation charge, and such extensions, general changes, and repairs, due to the operation of the Commission, as do not exceed a cost of \$100, separate bills to be rendered for all construction, changes, and repairs caused by the operation of the Commission, exceeding a cost of \$100, and charged directly against the department or division requiring such work.

2. That the monthly cost be reduced, effective July 1, to \$5,000 per month, to con-

form to the appropriation made for such service during the fiscal year, and that it be held to cover only the cost of operation and maintenance as outlined above.

3. That the Panama railroad bear the expense of changing the insulators on the relocated line, as the period during which the Commission agreed to pay half of the expense has expired.

4. That under the permanent organization the telegraph and telephone lines be operated by the Panama railroad as an adjunct of the railroad operations.

UNDERGROUND SYSTEM OF WIRE DISTRIBUTION.

A committee, consisting of Mr. R. K. Morris, Capt. W. H. Rose, Mr. Hartley Rowe, and Mr. C. L. Bleakley, has been appointed to consider and make recommendations with reference to placing any or all telegraph, telephone, and fire alarm, as well as electric light and power distribution systems of the Canal Commission and Panama railroad, underground in any or all of the permanent towns. The report is to cover the advantages and disadvantages of such a system, the necessary cost, program of work, and other essentials.

Red Cross Finances.

A statement of the finances of the Canal Zone Chapter, American National Red Cross, for the month of July, 1913, follows:

RECEIPTS.		
July 1.	On hand.....	\$2,320.96
July 5.	Refund of money advanced for deportation of Colombian family, Colon.....	15.00
July 7.	Returned money advanced family at Panama.....	15.00
July 9.	Interest credited at bank for March, April and May.....	10.80
July 18.	Final payment on \$100 advanced family at Panama.....	20.00
		\$2,381.76
DISBURSEMENTS.		
July 7.	To treasurer, American National Red Cross, one-half annual membership dues for quarter ended April 30.....	\$189.50
July 14.	Expenses in connection with deportation of destitute British subject, Colon.....	6.05
July 21.	Relief of destitute woman, Ancon.....	5.00
July 24.	Relief of deported Jamaican, Colon Hospital.....	5.00
July 26.	Relief of American, Colon Hospital, sent to United States account of tuberculosis.....	75.00
		\$280.55
July 31.	Balance on hand.....	\$2,101.21
		JOHN L. PHILLIPS.
Approved:		Treasurer.
EDW. SCHILDHAUER, Chairman.		

Immigration to the Isthmus During July.

According to the figures of the quarantine service, the number of steamship passengers who embarked at Colon during July was considerably in excess of the number who landed. The last month, prior to this time, in which the emigration exceeded the immigration at this port was in August, 1912. The number of persons who landed at the port of Colon from foreign ports during July was 3,566, consisting of 1,574 cabin, and 1,992 steerage passengers. The number of persons who embarked for foreign ports during the same period was 4,695, consisting of 2,043 cabin, and 2,652 steerage passengers. The number of persons who embarked over those who

landed was 1,129. The immigration from the West India islands, and from Colombia, shows a falling off of 1,055, as compared with the month previous, and consisted of 1,523 persons from the West Indies; and 139 from Colombia. The passengers arriving "in transit" numbered 2,306, consisting principally of people bound for the west coast of South America, and tourists. This number is 978 more than for the month of June. Ninety-nine vessels arrived at Colon during July, as compared with 88 in June.

The number of persons who landed at the ports of Panama and Ancon during the month from foreign ports was 672, consisting of 528 cabin, and 144 steerage passengers. The number of persons who embarked for foreign ports was 430, consisting of 330 cabin, and 100 steerage passengers. The number who landed over those who embarked was 242. The net emigration from the Isthmus during July was 887.

Contest for Artists.

Competition is invited by the Director General of the Panama National Exposition, to be held next year, in the submission of designs by both Panamanian and foreign artists for an emblematic coat-of-arms that will best set forth the discovery of the Pacific Ocean by Vasco Nuñez de Balboa, and the result of such discovery on the Iberian race and of humankind in general. To this end, the artist may employ any settings, scenes, or figures, real or fanciful, that will faithfully portray in heroic style the magnitude of the event. The author of the accepted design will be awarded a prize of \$200. All designs must be submitted before August 30, 1913. Further details may be obtained from the Director General, Panama National Exposition, care of the Minister of Public Works, Panama.

Parties Chartering Sightseeing Train.

Societies and other organizations chartering the sightseeing train of the Panama railroad will be required to state at least two days in advance the exact number of passengers to be carried. After the number has been set, charge will be made for it regardless of whether as many passengers are carried; and any passengers in excess of the number will be charged at the regular rate of \$1.50 a person. One social organization, which had chartered the train, requested that arrangements be made for carrying 150 persons, and only 43 took the trip. The ruling is a protection against hauling unnecessary equipment and furnishing unnecessary guide service.

Work of Lidgerwood Unloaders in July.

During the month of July, the following Lidgerwood trains and cars were unloaded by the Central Division:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa.....	4	1,099	23,079
Miraflores.....	1	155	3,255
Gamboa.....	4	1,011	20,220
Total.....	9	2,265	46,554

A contract has been entered into between the Canal Commission and the Rainwater Lumber Company of New Orleans, by which the latter will furnish 864,500 feet B. M., dimension lumber, f. o. b., Colon, at the rate of \$25.90 per thousand feet.

FUTURE OF PANAMA RAILROAD.

Directors Decide To Continue Railroad and Steamship Business, Along Present Lines.

At a meeting of the Board of Directors of the Panama Railroad Company, held in Washington, on June 19, to consider the future of the railroad, and its steamship line, the vice-president laid before the board communications from 13 directors of the Panama railroad, and of the Naval and Military Board, setting forth, in response to a request of the company, their individual views as to the advisability of continuing the operation of the railroad and steamship lines, and their conduct under the private charter of the company.

After a full consideration of these several views, it was unanimously concluded that the operation of a railroad over the Isthmus was both a military and a commercial necessity, and that for the purpose of maintaining a constant and adequate supply of provisions and materials upon the Isthmus for use in connection with the Canal and railroad, and of establishing reasonable prices with respect thereto, and for the purpose of maintaining a line of transportation at reasonable rates between the United States and the Isthmus, available to the employees, officers, and soldiers of the United States, and their families, domiciled upon the Isthmus in connection with the maintenance, operation, and protection of the Canal and railroad, it was highly advisable, it not necessary, that the Government should maintain a steamship line either directly, or through the agency of the Panama Railroad Company, between New York and Colon.

It was further the opinion of a large majority of the directors submitting opinions, and of all present and participating in the discussion, that for legal and practical reasons, it was inadvisable for the Government of the United States to surrender at the present time the charter of the Panama Railroad Company. This charter was granted by special act of the legislature of the State of New York in the year 1849, and which charter conferred valuable privileges not easily obtainable at the present time, including the right to operate a steamship line in connection with the railroad. Moreover, the title to land grants conferred upon the Panama Railroad Company by the Republic of New Granada in connection with the original concession, and the concessionary rights for the exclusive maintenance and control of all railway and water transportation routes across the Isthmus of Panama, were vested in the railroad company. These rights so vested have been subsequently recognized by the Republic of Colombia, and the Republic of Panama. It was further considered that the Panama railroad by reason of its exemption from governmental restrictions with respect to advances, and the collection and disbursing of funds, was capable of discharging a general transportation duty toward the public in the operation of its railroad and steamship lines, which could not be discharged by the Government of the United States operating directly without substantial amendments to the general statutes.

It was the opinion of the majority of the directors that, in the absence of an expression to the contrary by Congress, no good reason was perceived, why, in connection with the operation of the railroad and steamship lines,

they should not be allowed the use of its available space for the transportation to and from the Isthmus of commercial cargo. It was considered in this connection that the establishment of local rates between New York and Panama might have an indirect bearing upon the prices at which commodities might be handled by private merchants, and others upon the Isthmus, and thus indirectly redound to the benefit of the American population resident upon the Isthmus in connection with the operation, maintenance, and protection of the Canal. It was finally unanimously agreed, inasmuch as Congress under various Acts and Resolutions had recognized the continued activities of the Panama Canal, and in the Act of August, 1912, had authorized the continued use of the Panama Railroad Company for the purpose of discharging the duties and functions assumed by the Government in connection with the operation of the Canal, or thought desirable in reasons brought forth in the discussion, that no change of policy in the operation of the Panama railroad and steamship lines should be declared until such time as experience may have demonstrated that a change were advisable, or until such time as Congress may have indicated by legislation that the policy of the Government with respect to this company should be modified or reversed.

Thereupon it was unanimously

Resolved, that, except as the emergencies of the company's traffic may make changes necessary, there be no change in the present method of operating the Panama railroad, and its steamship line.

Removing Gorgona Shops.

The work of transferring Gorgona shops will be entirely completed by the end of August, and as the buildings are being torn down by the forces of the Quartermaster's Department as fast as they are vacated, the site will be left bare very soon after that time. The work of dismantling the car shop machinery was begun on August 4. It has been temporarily installed in the south end of the planing mill at Empire. All air brake work, and the equipment and employees connected therewith, were transferred to Empire shops on August 4, and all steamshovel repairs are now made at that point. The foundry at Gorgona was closed down on August 13, and the work was resumed at the new plant at Balboa on the next day. The night shift of machinists, blacksmiths, boilermakers, and pipe-fitters, with the exception of a few boilermakers making shore and pontoon pipe, commenced work at Empire on the night of August 12. The pattern shop was closed on August 12, and the work will hereafter be done at Balboa. The laboratory, both chemical and physical, was transferred to the Balboa power plant on August 9. The official records, and the office of the assistant superintendent, will be transferred to Empire on August 18. The oxy-acetylene plant will be one of the last to be transferred, and present plans call for its removal to Balboa on August 28; its transfer will probably entail a few days' interruption in the service. The wrecking outfit will be transferred to Empire about August 16.

All machinery at Gorgona shops not required in the permanent plant at Balboa, or at Paraiso, where a marine repair shop will be installed for the permanent dredging fleet, will be shipped to Cristobal and placed in the

machine and erecting shops at that point. The machinery destined for the new marine repair shop at Paraiso may be taken to Cristobal and temporarily stored in the shops.

PERSONAL.

Mr. Richard Lee Metcalfe of Lincoln, Nebraska, accompanied by Mrs. Metcalfe, three sons, Lee, Theodore, and Kenneth, and Miss Edna Harpham, a friend of the family, arrived on the *Panama* on Thursday, August 7. He assumed the duties of Head of the Department of Civil Administration on Saturday, August 9.

Commissioner D. D. Gaillard, accompanied by his family, sailed on the *Ancon*, on Saturday, August 9, on six weeks special leave of absence.

The resignation of Mr. Frank A. Gause as superintendent of schools became effective on August 9. Mr. Frank P. Wagg, formerly supervisor in the Division of Schools, has been appointed superintendent, effective about September 1.

Mr. W. M. Wood, assistant disbursing officer of the Canal Commission, has resigned, effective August 30, and, sailed for New York on the *Panama*, on Wednesday, August 13. He will spend a short time in the United States, and then leave for Cuba, where, near Guantanamo, he has business interests. His family will remain on the Isthmus for a few weeks and then join him in Cuba.

Civil Service Examinations.

A supply of the Manual of Examinations for the fall of 1913 has been received.

Examinations for the following-named positions are scheduled to be held, probably on September 14: Assistant inspector of boilers, assistant inspector of hulls, local inspector of boilers, local inspector of hulls, Steamboat-Inspection Service; copyist topographic draftsman, topographic draftsman, nonappropriated Departmental Service; junior engineer draftsman, Engineer Department at Large; field matron, Indian Service; kindergarten teacher, Indian Service; pharmacist, Public Health Service; physician, all services; printer, Government Printing Office; veterinarian, Bureau of Animal Industry and Quartermaster Corps. Applications will not be received after August 23.

Examination for guard, U. S. Penitentiary Service, will be held probably on September 28; applications will not be received after September 5.

Women will be admitted only to examinations for copyist topographic draftsman, topographic draftsman, field matron, and kindergarten teacher.

Application should be secured from and filed with this office. In requesting information, the kind of examination desired should be specifically mentioned.

The examinations will be held probably at Empire, in the Commission clubhouse, but the place of examination, and also the date, should be omitted in application forms.

Applicants for the Isthmian Canal or Philippine services who fail to present a photograph to the examiner will not be admitted to examination.

In answer to questions as to residence, applicants must show residence in a State or Territory of the United States, and county thereof, up to the time of filing application.

ISTHMIAN CIVIL SERVICE BOARD.

Culebra, C. Z., August 9, 1913.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule of moving picture dates for the week August 18 to 23 is, as follows: Monday, Corozal and Empire; Tuesday, Gatun; Wednesday, Culebra; Friday, Cristobal and Porto Bello; Saturday, Empire.

EMPIRE.

There are still a number of the Gorgona members who have not transferred their membership cards to the Empire Y. M. C. A. It is requested that the men do this as soon as possible. An invitation is extended to all new men to join the clubhouse, and take part in the activities.

An entertainment and "Smoker" will be given on Monday evening, August 18. All members are invited to attend.

The Empire clubhouse has purchased a piano player and a number of music rolls; the piano will be located on the first floor and used by those familiar with piano players.

The new covers and other pool and billiard table supplies have arrived, and the tables will be put in shape at once.

The 3-man bowling tournament has been started. Twenty-seven men have entered. The captains are, Edwards, Gustavson, Potter, Beattie, Parkis, Giavelli, Gilmore, King, and Peterson.

Mr. Connor played five members of the Empire chess team on Thursday, August 14, winning three games and losing two. A return match will be played.

Several new Spanish classes have started. All those wishing to enter should do so at once. Classes meet Tuesday and Thursday evenings, and Wednesday and Friday mornings.

GORGONA.

All equipment has been removed from the Gorgona clubhouse and transferred to the Lirio mill, Culebra, where it will be stored until the clubhouse is reerected and ready for use at Pedro Miguel.

The work of dismantling the present clubhouse began on Tuesday, August 12.

GATUN.

The *Wall Street Journal* has been added to the magazine list at the request of several members.

Mrs. F. A. Crosscup and Mrs. M. J. Nolan have recently presented with gold and silver medals, respectively, as prizes for a duckpin tournament, conducted among the women.

The front steps and various porches of the clubhouse have been made more attractive by means of a large number of ferns and other potted plants recently transferred from the Gorgona clubhouse.

D. C. Galloway, manager of pool and billiards, has arranged for a handicap pool tournament, which will be started on Wednesday evening, August 13. Those who have so far handed in their names are, as follows: Bailey, Pettitt, Von, Reisner, Townley, Kerruish, Garrison, Gray, Bradley, Johnson, Dennis, Carkeet, Hamill, Mitchell, Wali, Galloway. Gold, silver, and bronze medals will be given as prizes. The entrance fee is \$1 gold.

Several new duckpin and tenpin balls have been ordered from the United States; also, five sets of rubber band duckpins.

On Thursday evening, August 7, a large number of the members met and organized the "Red Hot" baseball league, with J. O. Childers, president, and H. J. Zane, secretary and scorer. The names of the various teams and players are, as follows:

Transportation—Sheppard (captain), Fluharty, Bowes, Wheeler, Hoffman, Clendennin, Peterson.

First Division—L. Mitchell (captain), Kyes, Winter, Ragan, Walchen, Shad, Easter.

Atlantic Division—Whiston (captain), Thompson, Wright, Roberts, Bailey, Coleman, Carkeet.

Commissary—Kerruish (captain), Hallowell, Delgado, Mock, Walsh.

McClintic-Marshall, Office—Hess (captain), Furlong, Zane, Childers, McMahon, Wurster, Wilson.

First McClintic-Marshall, Field—Rothgeb, (captain), Conley, Rothgeb, Bellringer, Galloway, Harper, Rendinell.

Second McClintic-Marshall, Field—M. Conley (captain), Brennan, Kotch, Hingle, Roudenbush, Tucker, Ridenauer.

The entrance fee is 50 cents. Gold cuff buttons will be given as prizes. The first games of the tournament were played on Monday, August 11. Immediately following the conclusion of the indoor baseball league games, a local tenpin tournament, and a local basketball tournament will be started.

The standing of the First Division duckpin tournament on Saturday, August 9, was, as follows:

Team.	No.	Name.	Won.	Lost.	P. C.
3	Dubbs	.....	4	2	.666
4	Biliacens	.....	2	1	.666
5	Boosters	.....	2	1	.666
1	Transmitters	.....	3	3	.500
2	Shuttles	.....	3	3	.500
6	Nutsplitters	.....	1	2	.333
7	Chronics	.....	0	3	.000

A new supply of pool cues is on sale at the clubhouse.

The following is a part of the program for the "Smoker" to be held on Saturday evening, August 23: Tenth Infantry orchestra; Tenth Infantry gun drill squad; Otis, Burmeister, Morrison, in a "Barbadian talk"; Charles Pierce, in a character sketch; Andy Carr, in characteristic songs; George Adam, ballad singing; Pierce and Adams, as the musical wizards; Harry Aaron, Chinese music; C. C. Pearsall, piano selections; Homer and Aaron, piano duet; Chas. Ray, in tenor vocal selections; McSparran and Carson, broadsword exhibition.

The new game of indoor quoits has become a very popular game among the members of the clubhouse.

Motion pictures will be shown on Saturday evening this week, instead of Monday, as previously announced.

CRISTOBAL.

Mr. D. E. Connor of Panama played a simultaneous chess match with Messrs. Wilson, Oden, Verner, Salzberg, Tuttle, Taylor, MacQueen, and Gill on Saturday evening, August 9. Mr. Connor proved more than a match for his contestants, with the exception of Mr. Taylor, with whom he played a draw.

Thirty men enrolled in the tenpin tournament, which began Tuesday, August 12.

The Corozal chess club will play the Cristobal club at Cristobal on Saturday, August 16.

A prize will be given for the highest score for the month in tenpins.

The Cristobal duckpin team of the "American" league will roll off the tie game with the Empire team on the Gatun alleys on Saturday, August 16.

The ladies' duckpin team will bowl the ladies' duckpin team of Gatun, Saturday, August 16.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission and Panama Railroad Company, arrived at the ports of Cristobal, Colon, and Balboa, during the two weeks ending August 9:

Magdalena, July 27, from New York, with 331 pieces steel plates, for stock.

Tivies, July 27, from New York, with 12 bales rubber hose, 398 coils Manila rope, 357 sacks oats, for stock.

Heredia, July 28, from New Orleans, with 600 barrels paving brick, 191 pieces creosoted ties, for Panama Railroad Company; 6,000 pieces yellow pine lumber, for Mechanical Division; 70 pieces piling, 279 pieces

cross-ties, 1,719 pieces yellow pine lumber, 28 crates handles, 45 cases lampblack, 311 bales prairie hay, 1,286 pieces sewer pipe, for stock.

Ancon, July 29, from New York with 135,311 bags cement, 264 slabs spelter, 109 kegs rivets, 100 cases lubricating oil, 11 packages lavatories, for stock; 47 packages boilers and fittings, for Sixth Division; 163 bundles car castings, 69 bags silica sand, for Mechanical Division; 256 pieces angles and bars, for Second Division; 48 reels copper wire, 65 cases machinery, for First Division; 68 cases caustic soda, 142 bags tile plugs, for stock; and a miscellaneous cargo, the whole consisting of 136,570 packages, weighing 6,920 tons.

Prinz August Wilhelm, July 28, from New York with 60 cases electrical machinery, for First Division; 16 cases paper, 1,247 pieces wrought iron pipe, for stock.

Santa Maria, July 30, from New York, with 9 cases bolts and washers, 1,500 pieces anchor bolts, for First Division; 10 cases hardware, for stock.

Skogstad, July 31, from Norfolk, with 202 tons smithing coal, for stock.

Atenas, July 31, from New Orleans, with 462 pieces yellow pine lumber, for Mechanical Division; 630 sacks dairy feed, for stock.

Pleiadés, July 31, from San Francisco, with 4 cases rubber hose, 10 drums carbon bisulphide, for stock.

Advance, August 2, from New York, with 56 cases incandescent lamps, 14 crates electrical machinery, 18 pieces locomotive tires, for Mechanical Division; 194 bundles steel bars, 84 pieces steel beams, 39 barrels solid asphalt, 14 crates building paper, for fortifications; 14 reels electric cable, 18 cases electric machinery, 14 barrels tiling, for First Division; 21 cases drug and sundries, 60 cases feed, for Sanitary Department; 12 bags pads, 20 packages stepladders, 22 cases water coolers, 16 cases copper nails, 600 pieces steel angle, 318 kegs paint, 50 rolls wire fencing, 200 pieces steamshovel castings, for stock; and a miscellaneous cargo, the whole consisting of 2,000 packages, weighing 22 tons.

Colusa, August 2, from Tacoma, with 153,000 pieces Douglas fir lumber, 141 pieces piling, for stock.

Sixtola, August 4, from New York, with 39 pieces structural steel, for Fifth Division; 18 pieces structural steel, for Second Division; 20 crates stovepipe, 16 crates lead pipe, for stock.

Emil L. Boas, August 4, from New York, with 66 cases machinery, for First Division; 69 pieces steel plates, 18 barrels pipe-fittings, 11 cases stable broom, for stock.

Parismina, August 5, from New Orleans, with 348 pieces mahogany lumber, 2,600 pieces yellow pine lumber, 55 pieces piling, 8 kegs washers, 500 cases kerosene, 200 drums kerosene, for stock; 729 barrels paving brick, for Panama Railroad Company; 2,300 pieces yellow pine lumber, for Mechanical Division.

Aztec, August 5, from San Francisco, with 2,473 pieces Douglas fir lumber, for stock.

Haakon VII, August 5, from New Orleans, with 2,882 pieces car lumber, for Mechanical Division; 28,000 pieces lumber, 75 drums gasoline, 145 pieces cross-ties, for stock; 2,518 barrels paving brick, for Panama Railroad Company.

Almirante, August 6, from New York, with 52 cases electrical material, for First Division; 37 coils copper wire, 10 barrels electrical material, for Mechanical Division; 232 packages structural steel, for Panama Railroad Company; 210 pieces structural steel, for Fifth Division; 817 kegs white lead, 33 barrels pipe-fittings, 95 kegs bolt spikes, 1,441 sacks oats, for stock.

Turrialba, August 7, from New Orleans, with 10 kegs washers, 22 pieces white oak lumber, for stock.

Alexandria, August 7, from Liverpool, with 58 pieces bucket links, for Sixth Division; 100 pieces dipper teeth, 204 barrels carbolic acid, for stock.

Panama, August 7, from New York, with 11 reels electric cable, 63 cases electrical material, for First Division; 12 barrels dry batteries, 7 cases incandescent lamps, for Mechanical Division; 240 drums paint, 457 cases nuts, 15 pieces steel plate, 18 pieces tees, 20 cases envelopes, 30 pieces castings, 1 kegs washers, 66 cases paint, 55 cases varnish, 78 pieces angles and channels, 300 kegs bolts, 40 bundles iron, for stock; and a miscellaneous cargo, the whole consisting of 1,900 packages, weighing 275 tons.

CLASSIFIED EXPENDITURES—ISTHMIAN CANAL COMMISSION.

A statement of classified expenditures of the Isthmian Canal Commission to April 30, 1913, follows:

PERIODS.	Department of Civil Administration.	Department of Law.	Department of Sanitation.	Department of Construction and Engineering.	General Items.	Fortifications.	Total.
Total to June 30, 1909.....	3,427,090.29	.....	9,673,539.28	69,622,561.42	78,022,606.10	.....	160,745,797.09
Total—Fiscal Year, 1910.....	709,351.37	.....	1,803,060.95	26,300,167.05	2,863,088.83	.....	31,675,648.20
Total—Fiscal Year, 1911.....	755,079.44	.....	1,717,792.62	27,477,776.19	3,097,959.72	.....	33,038,607.97
Total—Fiscal Year, 1912.....	820,398.57	24,729.16	1,620,391.12	28,897,738.10	2,819,926.52	1,212,881.66	35,396,065.14
July, 1912.....	63,913.12	1,448.53	123,803.64	2,649,246.61	200,970.55	104,126.92	3,143,509.37
August, 1912.....	62,182.51	1,468.26	123,154.48	2,539,680.83	*98,054.6	127,168.25	2,670,946.20
September, 1912.....	59,201.01	1,207.82	120,385.70	2,285,979.89	77,003.5	129,736.37	2,890,532.16
October, 1912.....	64,383.37	2,033.75	137,574.61	2,473,280.76	83,523.	300,016.33	2,979,005.03
November, 1912.....	62,200.12	1,892.14	119,031.66	2,420,085.77	75,770.	118,152.57	3,287,345.61
December, 1912.....	58,987.96	1,462.18	115,819.26	2,871,977.03	120,946.	119,272.77	3,125,339.76
January, 1913.....	57,699.58	1,469.59	114,562.04	2,825,872.06	6,462.	314,994.96	4,407,959.45
February, 1913.....	56,576.06	1,649.00	127,324.80	3,784,370.51	123,032.	131,940.75	3,003,003.48
March, 1913.....	58,761.03	1,899.22	105,891.08	2,712,218.1	*77.0	131,970.93	3,114,785.86
April, 1913.....	57,218.29	1,585.87	114,145.79	2,677,640.06	132,228	.....	.....
Grand total.....	6,313,052.72	40,845.51	16,016,458.03	179,538,594.32	87,517.69	2,801,664.06	202,228,779.34

Denotes credit.

OFFICIAL CIRCULARS.

Labor Day, a Holiday.

CULEBRA, C. Z., August 12, 1913.

CIRCULAR No. 496:

Labor Day, Monday, September 1, 1913, will be observed as a holiday throughout the Canal Zone, and as far as possible all work will be suspended on that day.

GEO. W. GOETHALS,
Chairman.

Head of Department of Civil Administration.

CULEBRA, C. Z. August 9, 1913.

CIRCULAR No. 495:

Effective this date, Mr. Richard L. Metcalfe, a member of the Isthmian Canal Commission, is placed in charge of the Department of Civil Administration, vice Mr. M. H. Thatcher, resigned.

GEO. W. GOETHALS,
Chairman.

Acting Division Engineer, Central Division.

CULEBRA, C. Z., August 8, 1913.

CIRCULAR No. 493:

During the absence of Lieut.-Col. D. D. Gaillard on leave, effective August 9, 1913, Mr. A. S. Zinn will act as division engineer of the Central Division.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Subsistence Officer.

CULEBRA, C. Z., August 12, 1913.

CIRCULAR No. 494:

During the absence from the Isthmus of Lieut.-Col. E. T. Wilson, Subsistence Officer, all his duties in connection with the Subsistence Department of the Isthmian Canal Commission and the commissary department of the Panama railroad will be performed by Capt. F. O. Whitlock, Assistant Subsistence Officer.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Extension of Hunting Limits.

CULEBRA, C. Z., August 6, 1913.

CIRCULAR No. 372-B:

The territory within which hunting is permitted, as described in Circular 372-A, is hereby extended to include all the territory in the Canal Zone west of the Canal proper and between the Atlantic Ocean and the Mandingo River. Hunting in the territory between the Pacific Ocean and the Mandingo River is prohibited.

Regulations providing for the hunting of birds will be published in the near future and attention is invited to the fact that in the meantime the hunting of birds is prohibited by Executive Order.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Paragraph 8, Special Orders No. 138, Temporarily Suspended.

WAR DEPARTMENT,
WASHINGTON, D. C., July 21, 1913.

SPECIAL ORDERS
No. 168.

[Extract].

40. The operation of Paragraph 8, Special Orders No. 138, June 14, 1913, War Department, relating to Maj. Percy M. Ashburn, Medical Corps, is suspended for a period of four months.

[2047984, A.-A. G. O.]

By order of the Secretary of War.

W. W. WOTHERSPOON,
Maj. General, Acting Chief of Staff.

Official:

H. O. S. HEISTAND,
Adjutant General.

Acting Chief Engineer, Panama Railroad.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., August 8, 1913.

CIRCULAR No. 154:

All Concerned.—During the absence of Lieut. F. Mears, chief engineer, on leave, Mr. E. Zook is appointed acting chief engineer, effective August 9, 1913.

JOHN D. PATTERSON,
General Superintendent.

Employees' 24-Trip Tickets.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., July 31, 1913.

CIRCULAR No. 147:

Heads of Departments.—Please instruct all employees in your department that all expired monthly trip passes

in employees' twenty-four trip pass books, must be removed and destroyed, before the book is presented for passage.

JOHN D. PATTERSON,
General Superintendent.

Stencilling of Division of Municipal Engineering Equipment.

CULEBRA, C. Z., August 1, 1913.

ALL ACCOUNTABLE OFFICERS:

The Chairman has approved recommendation that all rolling stock, excavating equipment, and hand and push cars assigned to service with the Division of Municipal Engineering be stencilled with a diamond "M. E."

Cars to now in the service of the forces of the Division of Municipal Engineering will be immediately restencilled (unless already so stencilled), and new equipment as assigned will be changed at once by the Division of Municipal Engineering.

R. E. WOOD,
Chief Quartermaster.

Taboga Sanitarium.

ANCON, C. Z., July 23, 1913.

Circular relative to Taboga sanitarium, of July 16, 1912, is hereby republished and amended, as follows: To All Concerned.—The rates charged for board and room at Taboga sanitarium will be, as follows:

Isthmian Canal Commission and Panama railroad employees regularly transferred as patients from Ancon, Colon, and Santo Tomas hospitals, no charge. So far as Santo Tomas Hospital is concerned, this refers to Commission employees detailed for duty there, and white employees of the Republic, regularly employed at the institution.

Such employees regularly transferred as patients from Ancon, Colon, and Santo Tomas hospitals, and who ask for private room to themselves, \$2 a day, when rooms are available.

Employees not transferred as above, and when two or more occupy the same room, \$1.50 a day.

Dependent members of families of Isthmian Canal Commission and Panama railroad employees, as follows: For adults, two, or more, assigned to the same room, \$1.50 a day each.

For adults occupying at their own request a room to themselves, when one is available, \$2 a day.

For all children of such employees under 12 years of age, except infants being fed at the breast, 75 cents a day.

For officers and enlisted men of the Army, Navy, and Marine Corps, stationed on the Isthmus, and for officers and crews of United States vessels cruising in adjacent waters, as follows:

For officers, \$1 a day. For Army officers, the charge is a personal one. For officers of the Navy and Marine Corps, the charge is made against the Bureau of Medicine and Surgery, United States Navy.

For enlisted men, the charge is the actual cost of the ration for the preceding month.

For members of families of officers and enlisted men of the Army, Navy, and Marine Corps, same as members of families of employees of the Isthmian Canal Commission and the Panama railroad.

For employees of the following companies doing work for the Commission on the Canal Zone, rate granted to employees of the Isthmian Canal Commission and the Panama railroad:

McClintic-Marshall Construction Company, United States Steel Products Company, Otis Elevator Company, Penn Bridge Company, American Cement Tile Manufacturing Company, Petroleum Iron Works Company.

For dependent members of families of such employees, rates granted to families of Commission employees.

For individuals not connected with the Isthmian Canal Commission, or the Panama railroad, and not having special hospital rates with the Commission, when two, or more, persons occupy one room, \$2.50 a day.

For such individuals occupying rooms alone, when rooms are available, \$4 a day.

Servants of employees, black, meals only, \$1 a day. Servants of employees, white, meals and room, \$1.50 a day. Servants of nonemployees, white, meals and room, outside rate.

With the exception of employees who have to be admitted to Taboga sanitarium from Commission and Santo Tomas hospitals, in order that their time may be covered by sick certificate, patients and nonpatients may be admitted to Taboga sanitarium direct, without approval of this office, on the written recommendation of any superintendent of hospital, or district physician of the department (this to include the superintendent of the sanitarium).

In sending patients and others to Taboga, in accordance with above rates, the superintendent of hospital, or district physician, should state specifically in his recommendation the name and exact status of each individual as to dependency, so that there may be no doubt as to the rate to be charged. Only employees and the im-

mediate dependent members of their families are entitled to the employee rate. Relatives visiting on the Isthmus should be charged outside rates.

Copies of all admission lists and letters should be furnished this office.

The usual precautions should be taken against sending cases of infectious disease to Taboga.

White people only are to be admitted to the sanitarium.

By direction of the Chief Sanitary Officer.

JOHN L. PHILLIPS,
Assistant Chief Sanitary Officer.

Delivery of Commissary Supplies.

CRISTOBAL, C. Z., August 13, 1913.

CIRCULAR No. 459:

To All Concerned.—By authority of the Chairman, delivery to persons occupying other than Isthmian Canal Commission or Panama Railroad Company's quarters is authorized, effective August 20, as follows:

1. Deliveries of ice, cold storage, and other supplies will be made to all employees in the Canal Zone at places where regular deliveries are now maintained, no matter whether employees live in Commission quarters or not.
2. Deliveries of ice and cold storage supplies will be made to employees living in non-Isthmian Canal Commission and Panama Railroad Company's quarters in the cities of Panama and Colon. Deliveries will not be made in Panama, however, beyond the railroad bridge leading to Las Sabanas road.
3. If employees to whom these deliveries are made abuse their commissary privileges by selling ice or other supplies to other persons, deliveries will be stopped in such cases, and recommendation will be made to deprive offenders of their commissary privilege.

JOHN BURKE,

Approved:

F. O. WHITLOCK,

Acting Subsistence Officer.

Changes in Mechanical Division.

GORGONA, C. Z., August 6, 1913.

To All Concerned.—Effective August 1, 1913, Mr. P. S. Cone is appointed general foreman of Pedro Miguel engine house, vice Mr. Geo. J. Gunn, resigned.

Mr. Chas. P. Hockenberry has been appointed night foreman of Pedro Miguel engine house and will assume the duties formerly performed by Mr. Cone.

Mr. Rolla A. Compton, traveling engine house foreman, has been appointed foreman of Balboa engine house, relieving Mr. Hockenberry.

J. J. EASON,

Approved:

Assistant Superintendent,

T. C. DICKSON,

Inspector of Shops.

Mechanical Division.

Rainfall from August 1 to August 9, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date	Total for period.
	<i>Ins.</i>		<i>Ins.</i>
<i>Pacific Section—</i>			
Ancon.....	1.13	7	2.41
Balboa.....	1.31	7	2.09
*Miraflores.....	.80	6	1.51
Pedro Miguel.....	.70	6	1.32
Rio Grande.....	.87	6	1.52
<i>Central Section—</i>			
Culebra.....	.86	6	1.65
*Camacho.....	1.15	6	1.74
Empire.....	1.86	6	2.93
Gamboa.....	1.32	7	3.94
*Juan Mina.....	1.23	5	3.32
Alhajuela.....	1.47	8	3.23
*El Vigia.....	1.37	6	3.04
*Gorgona.....	.75	6	2.84
*Frioles.....	2.63	6	4.84
*Monte Lirio.....	2.00	6	2.85
<i>Atlantic Section—</i>			
Gatun.....	1.62	6	2.07
*Brazos Brook.....	1.92	6	2.67
Colon.....	1.30	9	2.23
Porto Bello.....	1.54	5	1.80

*Standard rain gage—readings at 5 p. m. daily; automatic rain gage at unstarred stations—value midnight to midnight.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending August 23, 1913:

DATE.	Low		High		Low
	A.M.	A.M.	A.M.	P.M.	P.M.
Aug. 17.....	4.17	10.21	4.28	10.35	
Aug. 18.....	4.49	10.57	5.00	11.10	
Aug. 19.....	5.18	11.30	5.32	11.42	
		P.M.			
Aug. 20.....	5.47	12.02	6.02		
Aug. 21.....	12.15	6.15	12.37	6.31	
Aug. 22.....	12.45	6.45	1.10	7.02	
Aug. 23.....	1.17	7.17	1.45	7.35	

75th meridian time.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.
Retail prices of cold storage provisions for the week beginning August 11, 1913:

FRESH MEAT.	Price.
Mutton—Stewing, per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire forequarter (not trimmed, 10 pounds and over), per pound.....	8
Legs (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Legs (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	17
Chops, per pound.....	26
Loin for roasting, per pound.....	26
Cutlets, per pound.....	30
Beef—Suet, per pound.....	2
Soup, per pound.....	5
Stew, per pound.....	8
Plate, per pound.....	9
Corned, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Chuck roast, 3 lbs. and over, per pound.....	12
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds), per pound.....	18
Pot roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, Chuck, per pound.....	12½
Round, per pound.....	13
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds), per pound.....	20
Tenderloin Western, per pound.....	30
Pork—Loin chops or roast, per pound.....	17
Hams, fresh, per pound.....	20
Shoulders, fresh, per pound.....	15
Spare ribs, per pound.....	15
Backbones, per pound.....	15
Pigs' feet, each.....	7
Pigs' head, ½ head.....	60
Sausage meat, fresh, per pound.....	20
MISCELLANEOUS.	
Livers—Beef, per pound.....	11
Calf, each.....	60
Half, each.....	30
Steak, Hamburger, package.....	13
Sausage—Bologna, per pound.....	13
Frankfurter, per pound.....	13
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	20
Sweetbread, beef, per pound.....	40
Eggs, fresh, dozen.....	30
one-half dozen only.....	15
Bluefish, per pound.....	15
Halibut, fresh, per pound.....	15
Roe shad, each.....	75
Shad roes, pair.....	40
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds, each.....	1.25
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00
Fowls, each.....	1.60, 70, 80, 90 and.....
Ducks, (Western, about 4½ pounds), each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	50
Rabbits, skinned, each.....	30
Ducks, blackhead, pair.....	60
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants.....	1.30
CURED AND PICKLED MEATS.	
Ham—Genuine Westphalia, per pound.....	40
Ham—Sugar cured, per pound.....	20
Sliced, per pound.....	22
Half, for boiling, per pound.....	21
Boiled, per pound.....	28
Hocks, per pound.....	28
Beef, salt, family, per pound.....	12
Bacon—Breakfast, whole piece, per pound.....	25
Sliced, per pound.....	26
Ham, lunch, per pound.....	32
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00
Pigs' feet, per pound.....	9
Tongues, per pound.....	18
DAIRY PRODUCTS.	
Butter—Creamery, special, per pound.....	34
Sheffield Farms, extra fancy, per lb.....	46

Cheese—Philadelphia cream, cake.....	Price 10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Edam, tin.....	25
Parmesan, per pound.....	35
Gouda, per pound.....	30
Snappy, per cake.....	10
Milk (certified), per bottle.....	**20
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	125
½-gallon.....	150
VEGETABLES AND FRUITS.	
Beets, per pound.....	3
Celery, per head.....	*6
Cabbage, per pound.....	4
Cucumbers, per pound.....	*4
Carrots, per pound.....	14
Cauliflower, per pound.....	15
Egg plant, per pound.....	6
Lettuce, per pound.....	12
Onions, per pound.....	3
Potatoes, white, per pound.....	3
sweet, per pound.....	2
Parsnips, per pound.....	3½
Parsley, bunch.....	*5
Peppers, green, per pound.....	18
Rhubarb, per pound.....	4
Squash, per pound.....	*3
Turnips, per pound.....	4
Tomatoes, per pound.....	6
Apricots, per pound.....	15
Apples, per pound.....	110
Cantaloupes, each.....	7
Grape fruit, tropical, each.....	4
American, each.....	115
Lemons, dozen.....	*24
Limes, per hundred.....	80
Peaches, per pound.....	115
Plums.....	10
Oranges, Jamaica, per dozen.....	18
Watermelons, each.....	35

*Indicates reduction from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advance on last list.
‡Fowls weigh each, about as follows: 3. 3½, 4. 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock, next lightest weight is supplied and refund note sent for difference.
§Sold only from commissaries; no orders taken for delivery.
¶Not less than half of a fresh ham or shoulder will be sold.

Tug Service to Porto Bello and Toro Point.

Following is a revised schedule of Atlantic Division tugs in the service between Docks 13 and 16 and Porto Bello; and Docks 13 and 16, and Toro Point:

PORTO BELLO.
Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays—Leave Dock 13 at 5 p. m., arrive Porto Bello 10 p. m.; returning, leave Porto Bello 11 p. m., arrive Dock 13 about 6 a. m.
Saturdays—Leave Dock 13 at 9 a. m., arrive Porto Bello at 11 a. m.; returning, leave Porto Bello 3.45 p. m., arrive pier No. 4, Colon, 5.45 p. m.
Every Saturday—Leave Dock 13 at 6 p. m., arrive Porto Bello at 11 p. m.; returning, leave Porto Bello 12 midnight, arrive Dock 13 about 6 a. m.
Every Sunday—Leave Pier 16 at 7 a. m., arrive Porto Bello 9 a. m.; returning, leave Porto Bello 9 p. m., arrive Pier 16 at 11 p. m. (Effective August 17.)

TORO POINT.
Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays. Sailing No. 1—Leave Dock 13 at 6.30 a. m., arrive Toro Point 7 a. m.; returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. Sailing No. 2—Leave Dock 13 at 5 p. m., arrive Toro Point 5.30 p. m. Special, Wednesdays only—Leave Dock 13 at 12 noon, arrive Toro Point 12.30 p. m.; returning, leave Toro Point 12.30 p. m., arrive Dock 13 at 1 p. m.
Saturdays. Sailing No. 1—Leave Dock 13 at 6.30 a. m., arrive Toro Point 7 a. m.; returning, leave Toro Point 8 a. m., arrive Dock 13 at 8.30 a. m. Sailing No. 2—Leave Dock 13 at 5 p. m., arrive Toro Point 5.30 p. m.; leave Toro Point 5.30 p. m., arrive Dock 13 at 6 p. m.
Sundays. Sailing No. 1—Leave Dock 13 at 9.30 a. m., arrive Toro Point 10 a. m.; returning, leave Toro Point at 10.30 a. m., arrive Dock 13 at 11 a. m. Sailing No. 2—Leave Pier 16 at 4.30 p. m., arrive Toro Point 5 p. m.; returning, leave Toro Point 5 p. m., arrive Pier 16 at 5.30 p. m. (Effective August 10.)

Misdirected Letters.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:
Allen, John
Coffman, F. Lee
Gamer, Jose G.
Goujon, William
Guido, E. M. Hileman
Kuckler, F.
Lamont, Mrs. John
Marks, G. S. (2 pkgs)
McGowan, Mrs. H. B.
Mitchell, Arthur
Pentz, Artemus W.
Rigle, Mrs. Georgine
Sack, Jacob
Skires, Joseph
Stiner, Dave
Stokes, George
Stone, H. A.
Trowens, Joseph

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Allianca.....	P. R. R. Thursday.....	Aug. 7
Colon.....	P. R. R. Tuesday.....	Aug. 12
Advance.....	P. R. R. Tuesday.....	Aug. 19
Panama.....	P. R. R. Monday.....	Aug. 25
Allianca.....	P. R. R. Saturday.....	Aug. 30
Colon.....	P. R. R. Saturday.....	Sept. 6
Advance.....	P. R. R. Friday.....	Sept. 12
Panama.....	P. R. R. Thursday.....	Sept. 18
Allianca.....	P. R. R. Wednesday.....	Sept. 24
Colon.....	P. R. R. Tuesday.....	Sept. 30

CRISTOBAL TO NEW YORK.

Panama.....	P. R. R. Wednesday.....	Aug. 13
Allianca.....	P. R. R. Tuesday.....	Aug. 19
Colon.....	P. R. R. Sunday.....	Aug. 24
Advance.....	P. R. R. Sunday.....	Aug. 31
Panama.....	P. R. R. Saturday.....	Sept. 6
Allianca.....	P. R. R. Thursday.....	Sept. 11
Colon.....	P. R. R. Thursday.....	Sept. 18
Advance.....	P. R. R. Wednesday.....	Sept. 24
Panama.....	P. R. R. Tuesday.....	Sept. 30

NEW YORK TO COLON.

Santa Marta.....	U. F. C. Wednesday.....	Aug. 6
Pastores.....	U. F. C. Saturday.....	Aug. 9
Carl Schurz.....	H.-A. Saturday.....	Aug. 9
Metapan.....	U. F. C. Wednesday.....	Aug. 13
Prinz August Wilhelm.....	H.-A. Saturday.....	Aug. 16
Tivives.....	U. F. C. Saturday.....	Aug. 16
Tagus.....	R. M. Saturday.....	Aug. 16
Zacapa.....	U. F. C. Wednesday.....	Aug. 20
Emil L. Boas.....	H.-A. Saturday.....	Aug. 23
Sixaola.....	U. F. C. Saturday.....	Aug. 23
Almirante.....	U. F. C. Wednesday.....	Aug. 27
Oruba.....	R. M. Saturday.....	Aug. 30
Carrillo.....	U. F. C. Saturday.....	Aug. 30

COLON TO NEW YORK.

Zacapa.....	U. F. C. Thursday.....	Aug. 7
Emil L. Boas.....	H.-A. Tuesday.....	Aug. 12
Sixaola.....	U. F. C. Tuesday.....	Aug. 12
Almirante.....	U. F. C. Thursday.....	Aug. 14
Prinz Joachim.....	H.-A. Tuesday.....	Aug. 19
Carrillo.....	U. F. C. Tuesday.....	Aug. 19
Oruba.....	R. M. Tuesday.....	Aug. 19
Santa Marta.....	U. F. C. Thursday.....	Aug. 21
Carl Schurz.....	H.-A. Tuesday.....	Aug. 26
Pastores.....	U. F. C. Tuesday.....	Aug. 26
Metapan.....	U. F. C. Thursday.....	Aug. 28
Prinz August Wilhelm.....	H.-A. Tuesday.....	Sept. 2
Tivives.....	U. F. C. Tuesday.....	Sept. 2
Trent.....	R. M. Tuesday.....	Sept. 2
Zacapa.....	U. F. C. Thursday.....	Sept. 4
Emil L. Boas.....	H.-A. Tuesday.....	Sept. 9
Sixaola.....	U. F. C. Tuesday.....	Sept. 9
Almirante.....	U. F. C. Thursday.....	Sept. 11

NEW ORLEANS TO COLON.

Abangarez.....	U. F. C. Saturday.....	Aug. 9
Heredia.....	U. F. C. Wednesday.....	Aug. 13
Atenas.....	U. F. C. Saturday.....	Aug. 16
Parismina.....	U. F. C. Wednesday.....	Aug. 20
Turrialba.....	U. F. C. Saturday.....	Aug. 23
Cartago.....	U. F. C. Wednesday.....	Aug. 27
Abangarez.....	U. F. C. Saturday.....	Aug. 30

COLON TO NEW ORLEANS.

Turrialba.....	U. F. C. Thursday.....	Aug. 14
Cartago.....	U. F. C. Saturday.....	Aug. 16
Abangarez.....	U. F. C. Thursday.....	Aug. 21
Heredia.....	U. F. C. Saturday.....	Aug. 23
Atenas.....	U. F. C. Thursday.....	Aug. 28
Parismina.....	U. F. C. Saturday.....	Aug. 30

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, August 9, 1913. All heights are in feet above mean sealevel.

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela.	Gambao.	Gatun Lake*.
Sun., August 3.....	126.4	92.8	54.6	54.6
Mon., August 4.....	127.1	93.6	54.8	54.7
Tues., August 5.....	126.4	93.1	54.9	54.8
Wed., August 6.....	126.7	93.0	55.1	55.0
Thurs., August 7.....	131.0	96.1	55.5	55.2
Fri., August 8.....	130.0	96.0	55.5	55.5
Sat., August 9.....	128.2	94.5	55.7	55.7
Height of low water to nearest foot.....	125.0	91.0	44.0	

*Sluice gates in spillway of Gatun Dam were closed on June 27, 1913, with lake at elevation 48.25.

CANAL



RECORD

Volume VI.

ANCON, CANAL ZONE, WEDNESDAY, AUGUST 20, 1913.

No. 52.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is published free of charge, one copy each to all employees of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the new stands of the Panama Railroad Company for five cents each.

Address all Communications,
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission to the Secretary of War for the month of July is published in full in this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Canal Excavation in July.

The grand total of Canal excavation to August 1, was 206,604,949 cubic yards, leaving to be excavated under the revised estimate of July 1, 1913, 25,748,051 cubic yards.

The total excavation for the month of July was 3,241,968 cubic yards, as compared with 2,633,437 cubic yards for the corresponding month last year, and 2,518,982 cubic yards in July, 1911. The excavation yardage for the month of July was the largest since March, 1911, and the total excavation by dredges—2,022,883 cubic yards—was greater than during any previous month since the beginning of Canal construction, exceeding the previous high record, made in May, 1913, by over half a million cubic yards. The dry excavation for the month amounted to 1,219,085 cubic yards, and was entirely by steamshovels.

In the Atlantic Division, the total excavation was 939,704 cubic yards. Of this amount, all but 17,756 cubic yards consisted of material dredged from the Atlantic entrance and approach to Gatun Locks.

The total excavation in the Central Division was 1,057,200 cubic yards, 112,900 cubic yards of which consisted of hydraulic work, back of Gold Hill, performed by forces of the Fifth Division. Central Division shovels removed 924,800 cubic yards from Culebra Cut, including slides, and 19,500 cubic yards, charged to "Plant" excavation. The total excavation from the Culebra Cut section in July, 1912, was 1,336,366 cubic yards.

In the Pacific section, operations by the Sixth Division resulted in the excavation of 988,035 cubic yards by dredges, 756,930 cubic yards from the Pacific entrance, and

231,105 cubic yards from the terminal basin. Excavation by steamshovels in this section consisted principally of the removal of 88,288 cubic yards at the terminal site, by forces of the Second Division, and 167,805 cubic yards from the Canal prism, south of Miraflores Locks, by forces of the Fifth Division.

A detailed statement of excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total Excavation.
Dry excavation—	Cu. Yds.	Cu. Yds.	Cu. Yds.
Locks, dam and spillway.....	17,756	.....	17,756
Mindí.....	.....	.....	.....
Terminal.....	.....	.....	.....
Total.....	17,756	.....	17,756
Wet excavation—			
Atlantic entrance.....	921,948	.....	921,948
Locks, dam and spillway.....	.....	.....	.....
Terminal.....	.....	.....	.....
Total.....	921,948	.....	921,948
Total wet and dry excavation.....	939,704	.....	939,704

CENTRAL DIVISION.

Dry excavation—			
Culebra Cut.....	924,800	19,500	944,300
Hydraulic excavation			
Culebra Cut.....	112,900	.....	112,900
Total.....	1,037,700	19,500	1,057,200

PACIFIC DIVISION.

Dry excavation—			
Locks, dams and spillway.....	936	.....	936
Terminals.....	87,240	1,058	88,288
Prism.....	167,805	.....	167,805
Total.....	255,971	1,058	257,029
Wet excavation—			
Pacific entrance.....	756,930	.....	756,930
Miraflores Locks.....	.....	.....	.....
Divisions.....	.....	.....	.....
Terminals.....	231,105	.....	231,105
Total.....	988,035	.....	988,035
Total wet and dry excavation.....	1,244,006	1,058	1,245,064

TOTAL CANAL EXCAVATION.

Dry excavation.....	1,198,227	20,558	1,219,085
Wet excavation.....	2,022,883	.....	2,022,883
Total.....	3,221,410	20,558	3,241,968

LOCKS AND DAMS.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	Cu. Yds.	Cu. Yds.
Concrete placed in locks.....	3,431	5,639	9,070
Concrete placed in dams and spillways.....	1,513	6,809	8,322
Fill placed in dams.....	91,885	9,560	101,445

Mean rainfall along Canal (ten stations), 7.26 inches. By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as prism, diversions, or locks, etc.; that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

ESTIMATE OF EXCAVATION.

Revision of July 1, 1913. Shows 20,000,000 Cubic Yards Increase Over July 1, 1912.

The total excavation necessary to complete the Canal has been increased by the revised estimate of July 1, 1913, to 232,353,000 cubic yards. The highest previous total was that of February, 1913, which was 218,138,000 cubic yards, in round numbers, an increase of 14,215,000 cubic yards. The increase over the estimate of July 1, 1912 is 20,126,000 cubic yards of which 9,067,000 cubic yards is due to work caused by slides and breaks in Culebra Cut. The tabulated statement herewith shows the increase by geographical divisions. The amount remaining to be excavated according to the June, 1913 excavation statement was 14,812,034 cubic yards, and to this amount there has been added 14,157,427 cubic yards, making a total of 28,969,461 cubic yards to be excavated as of July 1, 1913.

The tabular statement of excavation, by geographical divisions, as of July 1, 1913, follows:

Divisions.	Accomplished.	Remaining.	Total.
	Cu. Yds.	Cu. Yds.	Cu. Yds.
Atlantic.			
Dry excavation.....	8,828,582	26,418	8,855,000
Dredges.....	37,156,984	7,155,016	44,312,000
	45,985,566	7,181,434	53,167,000
Central.			
Culebra Sec.....	94,811,800	10,200,200	105,012,000
Other places.....	12,384,655	300,345	12,685,000
	107,196,455	10,500,545	117,697,000
Pacific.			
Dry excavation.....	9,428,404	1,359,596	10,788,000
Dredges and hydraulic.....	40,773,114	9,927,886	50,701,000
	50,201,518	11,287,482	61,489,000
Grand total.....	203,383,539	28,969,461	232,353,000

The increase in volume of excavation over the estimate of July 1, 1912 is due to the following causes:

ATLANTIC GEOGRAPHICAL DIVISION.

Dredging at coaling station and approach.....	20,000,000
Removing shoals.....	3,000,000
Dredging Canal channel, maintenance, etc.....	1,000,000
Total.....	5,229,000

GATUN LOCKS, DAMS, AND POWER HOUSES.

Steamshovel excavation for foundations power and control houses.....	195,000
Dredging at north approach will, Gatun Locks.....	270,000
Total.....	415,000

CENTRAL DIVISION.

Sluicing back of Gold Hill to lessen weight of bank.....	2,057,000
Excavation of diversions and accessories.....	136,000
Excavation Canal prism and slides.....	9,067,000

Total..... 11,280,000
An indeterminate portion of the 9,067,000 cubic yards in the prism and slides is to be removed by dredges

PACIFIC GEOGRAPHICAL DIVISION.

Wet excavation, including maintenance.....	3,065,000
Dry excavation, Miraflores Locks, dams, and power houses.....	5,000

Total..... 3,070,000
Dry excavation in the Canal channel and accessories, and at Pedro Miguel Locks and dams, have been de-

creased by the estimate 371,000 and 6,000 cubic yards, respectively.

PACIFIC TERMINALS AND SHOPS.	
Dry excavation.....	229,000
Wet excavation.....	280,000
Total.....	509,000
Grand total net increase.....	20,126,000

Concrete Work in Locks and Spillways.

Concrete work in the Canal locks is nearly completed, the aggregate amount in place at the close of work on August 16, being 4,476,850 cubic yards.

A statement of the concrete laid in the three sets of locks for the Canal, and in Gatun and Miraflores spillways, as of August 16, follows:

GATUN LOCKS.		Concrete laid, Cubic yards.
Aug. 11.....		170
Aug. 12.....		166
Aug. 13.....		180
Aug. 14.....		140
Aug. 15.....		94
Aug. 16.....		6
Total.....		756
Previously reported.....		2,044,729
Grand total.....		2,045,485

PEDRO MIGUEL LOCK.		Concrete laid, Cubic yards.
Aug. 10.....		8
Aug. 11.....		16
Aug. 12.....		18
Aug. 13.....		20
Aug. 14.....		23
Aug. 15.....		28
Aug. 16.....		24
Total.....		137
Previously reported.....		922,815
Grand total.....		922,952

MIRAFLORES LOCKS.		Concrete laid, Cubic yards.
Aug. 11.....		127
Aug. 12.....		127
Aug. 13.....		118
Aug. 14.....		94
Aug. 15.....		82
Aug. 16.....		97
Total.....		645
Previously reported.....		1,507,768
Grand total.....		1,508,413

GATUN SPILLWAY.*		Concrete laid, Cubic yards.
Aug. 11.....		82
Aug. 12.....		126
Aug. 13.....		98
Aug. 14.....		64
Aug. 15.....		108
Aug. 16.....		122
Total.....		600
Previously reported.....		231,972
Grand total.....		232,572

MIRAFLORES SPILLWAY.		Concrete laid, Cubic yards.
Aug. 11.....		148
Aug. 12.....		116
Aug. 13.....		76
Aug. 14.....		106
Aug. 15.....		168
Aug. 16.....		90
Total.....		704
Previously reported.....		74,286
Grand total.....		74,990

*Includes hydroelectric station.

Work on Floating Cranes.

The Deutsche Maschinenfabrik A. G. of Duisburg, Germany, the contractor for the two floating cranes, has sublet the work of building the pontoons for the cranes to the Nordseewerke at Emden. This is an old shipbuilding firm, which was recently reorganized on a large scale by the Deutsche Luxemburgische Bergwerks und Hütten A. G. The boilers and piping for the cranes have been ordered from the Fabrik Gebr. Sachsenberg in Rossler am der Elbe. The status of the work on July 15 was, as follows: Several drawings had been approved, and orders had been placed by the Nordseewerke

for about 40 per cent of the material for the two pontoons, most of them with the Gelsenkirchener Bergwerks A. G., at their mills in Aachen, "Rote Erde," and in Dortmund Union.

Suggestions from Employees.

Gold Employes of the Isthmian Canal Commission:

Believing that there may be a considerable number of employees, who, from their experience on the Isthmus, have formed definite ideas which might be of value, the Commission will be glad to receive suggestions in brief form from employees, on the gold roll relative to any feature of the work under the present or permanent organization, or any other suggestion which they may care to offer. Such suggestions, will be carefully considered and adopted if found to be advantageous, but the Commission does not obligate itself to make reply in detail to all communications received, and employees will submit the same with that understanding.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

CULEBRA, C. Z., August 16, 1913.

West Indian Laborers Wanted by United Fruit Company.

Advice has been received from the local general agent of the United Fruit Company to the effect that he is in a position to offer employment to between 4,000 and 5,000 West Indian laborers on the company's plantations in Costa Rica and Bocas del Toro. The conditions of employment are stated to be about the same as those under which the Isthmian Canal Commission has in the past recruited laborers from the islands.

For further information apply to Mr. H. R. Wilford, General Agent, United Fruit Company, Colon.

Church Notes.

The woman's Bible class of Empire invited the visiting missionary, the Rev. Alfred DeRoos, to speak at its meeting on Friday, August 15. Mr. DeRoos spoke of the expectation of the Jewish women at the time of the birth of Christ, and the humility of the Virgin Mary.

Owing to the evangelistic meetings that are being held in the Commission chapel, Empire, the Christian Endeavor Society has suspended its meetings. The society will resume its meetings next month, and it is planning to give an entertainment in the near future.

Society of the Chagres Emblems.

Complaints have been received from members of the Society of the Chagres of the enamel's chipping from their society emblems. If those in possession of such damaged emblems will forward them to the undersigned, they will be sent to the manufacturer, repaired, and returned to the owners, free of charge.

W. F. SHIPLEY,
Secretary-Treasurer.

CRISTOBAL, C. Z., August 18, 1913.

Ships engaged in carrying freight for the Canal Commission and the Panama railroad, or their respective contractors, except such ships as are engaged in the local coastwise trade of the Republic of Panama and do not touch at foreign ports, will be extended commissary privileges.

END OF GORGONA SHOPS.

Plant Has Been Prominent Adjunct of Canal Construction.

The native village of Gorgona, which will shortly disappear under the waters of Gatun Lake, has been a landmark in the transit of the Isthmus, and is known to be very old. The name is believed to have come from the currents in the treacherous Chagres at this point, as in Spanish *gorgona* means dangerous waters. From its earliest times the village has been a trading place for those who plied the Chagres, from the Atlantic to the mountains, but it came into considerable local prominence after 1835, when the river was made navigable for boats of light draft, larger than canoes, as far as Cruces. Prior to that, transit had been from Panama to Cruces, and thence to Porto Bello (earlier, to Nombre de Dios), all the way by the old paved trail. With the opening of the Chagres below Cruces, the trade route shifted to this forerunner of the Canal. Gorgona became a favorite stopping place for the boatmen; usually, on the up-trip; they rested there over night, before attempting the severer currents in the rise to Cruces, six miles beyond. Within a few years the "Gorgona road" to Panama, a rough and miry trail broken through the jungle, became a noteworthy competitor of the paved trail from Cruces; during the gold rush of the middle century its use saved hours for the eager travelers, and Gorgona came to be largely the head of navigation. When the Panama railroad was built, up the valleys of the Chagres and the Obispo to the continental divide, Gorgona was the base of operations for one section. Material and supplies were hauled up the river in light-draft barges, and track was laid from the village, north toward Aspinwall, and south toward Panama.

The first French canal company established machine and manufacturing shops near the village in the year following the formal beginning of work, on January 4, 1882. In the seven years of the company's activity, the shops, called then Bas Matachin atelier, grew to be the most important repair and manufacturing center for the varied machinery employed, though under the French organization of many construction districts, none of the shops was large. With the collapse of the first company, which was dissolved on February 4, 1889, the shops fell idle; but upon the resumption of work in October, 1894, by the new company, they were in use until the formal transfer of property to the United States on May 4, 1904.

When Chief Engineer Wallace took charge, on July 2, 1904, he devoted his first efforts to reorganization and enlargement of force and plant. Almost immediately requisitions were made for modern equipment, but in the meantime such of the large amount of French machinery in storage as seemed potentially useful was overhauled and put in service. Operations began on July 11, Mr. Wallace reported, for "The reestablishment of a machine shop of considerable capacity at Gorgona, where much heavy construction and repair work were done." The buildings for shops and quarters were found in bad condition. The machines, though somewhat antiquated, were in fair condition, having been carefully oiled and coated with white lead when the shops were closed, but most of them required new foundations. At the

end of the year, the capacity of the shops was sufficient to overhaul each month about five locomotives and 160 French dump cars, besides doing much miscellaneous work. The capacity of the foundry was about 50 tons of iron castings and 1½ tons of brass castings per month. The plant occupied about three acres, and the aggregate floor space of its buildings was 36,750 square feet.

As it was obvious that this plant was not equal to the service demanded of it, a decision was made in March, 1905, to rebuild the Bas Matachin shops and equip them for heavier work. One of the newly arrived steamshovels from the United States was set at work on the site, the spoil being used to fill an adjacent slough, between the old plant and the railroad.

From that time until 1912, when it was decided that the shops should be moved to Balboa in 1913, the history of Gorgona shops was a record of the concentration of work from other shops, and of expansion of buildings and equipment, in size and variety, to care for the increase of work. The site covered became seven times that of 1904, and was served with seven miles of railroad. The floor space of the buildings increased to 322,370 square feet.

WORK ACCOMPLISHED.

Inasmuch as Gorgona shops were the principal manufacturing and repair center during the American Canal construction, with its many ramifications, their work may be more easily imagined, from the foregoing summary of their growth, than itemized; the details of their activity, like a bill of household sale, are "too numerous to mention." In general, the work has comprised the manufacture of castings for the construction of machinery, of parts for repairs, and in making repairs, principally to the rolling stock used in excavation, and on the Panama railroad.

The largest single order for castings filled at Gorgona shops was for 2,924 covers for the recesses in the lock walls; the total weight was 1,643,881 pounds, an average of 596.26 pounds each. The largest of these castings, measuring 13 feet one inch by three feet in plan, weighed 3,000 pounds. The order was filled between February, 1912, and March, 1913, being used as timework in the iron foundry when it was not fully occupied with orders of more urgent demand. The second largest order, executed in 1910, was for 1,197,000 pounds of counterweights for the spillway gates and upper guard valves in the lock culverts; there were 1,586 weights, an average of 755.36 pounds each. A third large order was for 955,008 pounds of gray iron castings for the seats, at the lock entrances, for the floating caisson dams.

Following is a summary of total weights of iron castings and of patterns made for them, in each fiscal year since 1905:

FISCAL YEAR.	Iron.		Brass.		Total.
	Patterns.	Pounds.	Patterns.	Pounds.	
1905.....		164,000		11,300	
1906.....		1,151,607		60,000	
1907.....		3,599,798		232,474	1,980
1908.....		4,274,237		216,947	1,462
1909.....	1,080	4,586,342	359	333,416	1,439
1910.....	1,466	4,820,762	3,2	393,995	1,839
1911.....	1,616	8,715,617	630	453,548	2,246
1912.....	1,914	7,476,014	408	350,711	1,602
1913.....	982	7,051,259	371	324,675	1,353
Total.....		41,839,637		2,347,017	11,921

*Including 50,000 pounds of semisteel.

From the opening of the steel foundry on February 1, 1912, to June 30, 1912, the weight of steel cast was 199,803 pounds, in 1,194 castings, for which 106 patterns were made. In the fiscal year 1913, the steel castings weighed 794,593 pounds and required 336 patterns.

Repair work has been even more diversified than the work of manufacture. Exclusive of the marine equipment, for which numerous castings were made, it has covered all equipment in the construction work, from sextants to steamshovels; mention has been made in THE CANAL RECORD of the spiders kept at Gorgona shops to spin threads for the surveying instruments. The bulk of the work, however, was on rolling stock. During 1904 and 1905, the work of the shops was largely in overhauling old French machinery and in erecting that received from the United States; no itemized records of repairs were preserved. Following is a summary of principal repairs since that time, by fiscal years:

FISCAL YEAR.	Locomotives.		Cars. (Not including field.)	Other equipment.	Total.
	Heavy.	Running			
1906.....	11	10	856		877
1907.....	*109	1,159	10,086	816	12,170
1908.....	58	3,232	23,423	2,277	28,990
1909.....	165	7,232	40,674	325	48,396
1910.....	300	21,485	35,293	2,135	61,913
1911.....	209	26,968	117,222	2,240	46,639
1912.....	210	37,197	121,561	2,806	61,774
1913.....	517	39,246	22,620	1,354	63,737
Total.....	1,579	136,529	171,735	11,953	324,496

*Including erection of 89 new locomotives.

†Including shop repairs at Pedro Miguel engine house.

Because of the severe service to which they are subjected in the transportation of spoil from the steamshovels, all of the 1,800 Lidgerwood flat cars have been rebuilt from time to time; some have been in the shops for heavy repairs as many as five times. These cars cost \$1,998,000 when new, and approximately the same amount has been spent on their repairs.

ORGANIZATION.

On August 31, 1904, the Commission created the Department of Material and Supplies, which embraced the mechanical work. Mr. E. C. Tobey, U. S. N., was appointed head of the department. In 1907, was created the Departments of Municipal Engineering, Motive Power, and Machinery, and Building Construction, of which Mr. H. H. Rousseau was chief. Mr. Rousseau has since been in general supervision of the shop work, as head of the Second Division of the Office of the Chief Engineer. Upon the creation of the Mechanical Division on October 1, 1909, Mr. A. L. Robinson was appointed superintendent thereof, with offices at Gorgona shops. Mr. W. O. Johnson was appointed inspector of shops on May 1, 1910; upon his resignation, Lieut.-Col. T. C. Dickson, U. S. A., was appointed to the place, effective June 27, 1910, which position he holds at this time.

Mr. Robinson resigned on July 19, 1913, and the position of superintendent of the Mechanical Division was abolished. The position of assistant superintendent was created at the same time and Mr. J. J. Eason, formerly general foreman of the car department and foundry of Gorgona shops, appointed to the place. The Mechanical Division is under the supervision of the inspector of shops as a part of the work of the Second Division.

Consequent on the changes in the organization, the records do not show exactly the personnel at Gorgona shops each year. On September 30, 1904, when the total Canal force was 471 "gold" and 2,675 "silver" employes, the Department of Material and Supplies employed 28 gold and 265 silver men, a total of 293. On September 30, 1905, the total force at the Bas Matachin shops was 726, with a monthly payroll of \$41,659. By June 30, 1907, it had grown to 1,197, exclusive of the office force. The transfer of artisans to other shops, notably those at Empire, reduced this

number to 882 on June 30, 1908. Including the electrical subdivision, the forces of Gorgona shops aggregated 1,037 at the close of the fiscal year 1909, during which the average monthly payroll was \$78,765.28. During the next year, the average force at Gorgona shops alone was 523 gold and 661 silver men, a total of 1,184. The force was increased to 830 gold, and 1,247 silver men, total 2,077, by June 30, 1911. On June 30, 1912, the numbers were 743 gold, 1,197 silver men, total of 1,940. On June 30, 1913, the gold force at Gorgona shops numbered 990, the silver employes 2,461, a total of 3,451. The payroll for these men for the month of June was \$202,956.15.

REMOVAL TO BALBOA.

The plant at Gorgona covered 21 acres, and had floor space aggregating about 322,370 square feet. The shops at Balboa will occupy 42 acres with a total floor space of 523,915 square feet; a comparison of floor spaces of principal buildings of the two plants is shown herewith:

BUILDING.	FLOOR SPACE, Square feet.	
	Balboa	Gorgona.
Machine, erecting and tool shop.....	67,120	83,000
Boiler and shipfitters' shop.....	45,940	35,600
Forge shop.....	31,650	12,600
Steel storage shed.....	18,080	
General storehouse.....	89,920	30,000
Paint shop.....	12,760	7,200
Car shop.....	38,800	99,000
Planing mill, carpenter and pattern shop.....	48,240	15,000
Galvanizing shop.....	5,620	
Lumber and equipment store shed.....	67,180	
Steel, iron, and brass foundry.....	37,060	29,000
Coke shed.....	3,070	1,000
Boiler house.....	2,380	4,100
Pattern storage building.....	6,960	9,000
Round house.....	25,343	*7,500
Office building.....	22,843	6,000
Gas house.....	649	

*Engine house only.

Because of the different conditions which they will serve, exact comparison of the two plants is impracticable. Some plants at

Gorgona will not be reproduced, while the Balboa shops will care for kinds of work with which the inland shops at Gorgona had nothing to do.

Preparation of plans for the permanent shops was begun in the office of the chief draftsman at Gorgona shops in 1911. In July, 1912, the removal of Commission employes' quarters at Balboa, and of the adjacent native village of La Boca, was begun, and steamshovels were set at work, excavating along the north base of Sosa Hills, to prepare the site for the terminals, of which the permanent shops will be a conspicuous part. The laying of foundations proceeded rapidly, and the first erection of superstructure for the shop buildings was begun in May, 1913, on building No. 8, the planing mill. The laying of the roof began on this building on June 18. On July 7, the planing mill at Gorgona shops was closed, to allow the transfer of its equipment to Balboa, and toward the latter part of the month the new mill began to turn out work.

The transfer of the iron, steel, and brass foundries, and the pattern shop, was begun on July 28. The work of moving them is still under way, and the completion of boiler, machine, and erecting shops and other parts of the large plant will follow in the course of events. The work of Gorgona shops will be distributed, for the time, at Empire, Cristobal, and Balboa. It is expected that the buildings at Gorgona will be entirely vacated by September 1.

Burning of the "Manzanillo."

The launch *Manzanillo*, engaged in survey work in the vicinity of Gorgona, caught fire from an unknown cause near Frijoles about 8.30 a. m., on Saturday, July 26, and was completely destroyed. The operator, Esau Johnson, was drowned in attempting to swim to a nearby tree. Three chainmen from the survey party reached the trees in safety, and were picked up later by the launch *Hibiscus*. At the time of the accident, the *Manzanillo* was returning to Gatun for a new supply of gasoline, and material for the survey party. After catching fire, the launch drifted a distance of about three-fourths of a mile, and finally lodged in the trees and brush along the Canal. The launch was built at the Cristobal dry dock shops, and was placed in service June 14, 1909. It cost \$1,090.79.

Launch Trips Between Gatun and Gorgona.

The launch *Margaret* will be run every Sunday from Gatun to Gorgona and return. The object of this trip is to enable masters and mates in the employ of the Commission to familiarize themselves with the Canal channel between Gatun and Gorgona. The launch will leave Gatun at 9 a. m., and Gorgona at 2.40 p. m. The number of passengers for these trips will be limited to six. Passes may be procured from Mr. W. G. Comber, Resident Engineer, Balboa, C. Z.

Temporary Pumping Facilities on Pacific Side.

In order to furnish additional water supply facilities at the Pacific end of the Canal in advance of the completion of the permanent pumping station and filtration plant, it has been decided to install a temporary pump station in the rear of the railroad station at Miraflores. This will involve the construction of a concrete sump and screen chamber,

from which the water will be lifted by pumps and forced directly into the 16-inch and 20-inch mains to Panama. It is planned to begin work on this sump at once, in order to have it ready for use by the time the water in Miraflores Lake reaches elevation 40 feet above mean sealevel. The station will be equipped with four centrifugal pumps, each having a capacity of 1,500 gallons a minute. Two pumps now at Gamboa dike pumping station will be installed as early as possible, and so arranged that water can be drawn from the Rio Grande reservoir and pumped into the mains to Panama, or from the sump, dependent on the stage of water in the reservoir. When the first two pumps have been placed in service, the two pumps now at Cocoli station will be removed and installed in the temporary station at Miraflores. The maximum capacity of the four pumps will be 6,000 gallons a minute, or approximately 8,500,000 gallons a day, which about represents the present daily consumption, south of Miraflores.

Rise of Gatun Lake.

On August 11, the surface of Gatun Lake reached and passed an elevation of 56.28 feet above sealevel, which is the highest point it had attained before the present rise. The gage on Guarapo Island, near the spillway, registered 56.28 feet on November 29, 1912, and again at 3 a. m., on August 11, 1913. The reading rod at the gaging station, however, has been raised .05 inch since January 1; accordingly, a surface of 56.28 last year is equivalent to a reading of 56.23 at present. The gage registered 56.23 at 1.15 a. m. on August 11.

Record in Changing Pumps.

The main pump of dredge No. 85 at work in the inner harbor at Balboa, was changed in 24 hours, dredge being shut down at 6 p. m., August 16, and started up again at 6 p. m., August 17. At the same time the runner and liners on the relay pump were changed. The work suffered a delay of two hours on account of a workman losing a box of bolts overboard.

This is thought to be a record for this class of work on the Isthmus.

Addition to Administration Building, Culebra.

In order to relieve the crowded condition of the offices of the Chief Quartermaster, a 15-foot extension is being constructed to the Administration Building at Culebra. The ell will be two stories high, and will extend over the bowling alley of the clubhouse. The additional space will be used by the force in the timekeeping office, and that of the Chief Quartermaster.

Shipments of Employes' Household Goods.

The regulations relating to the shipment to the United States of household goods of officers of the United States Army detailed on the Isthmus, and of American employes of the Canal Commission and Panama railroad, have been extended to the American employes of contractors engaged on Commission work on the Isthmus, whose contracts in other respects cover the same privileges afforded employes of the Commission.

The tug *Bolivar* has been transferred from the Panama railroad to the Sixth Division, effective July 26. The latter will pay the appraised value for the vessel, which was fixed by the Board of Local Inspectors at \$16,750.

EXECUTIVE ORDER.

To Prohibit the Unauthorized Use of Flying Machines.

By virtue of the authority vested in me, I hereby establish the following Order for the Canal Zone:

Section 1. It shall be unlawful for any person to operate an aeroplane, balloon, or flying machine of any kind in or across the Canal Zone without the written authority of the Chief Executive of the Canal Zone.

Section 2. It shall be unlawful for any person to take or make a photograph, picture, or sketch of any kind of the fortifications or other military works in the Canal Zone from any aeroplane, balloon, or flying machine of any kind without the written consent of the Chief Executive of the Canal Zone.

Section 3. A violation of any of the provisions of this Order shall be punishable by a fine not exceeding One Thousand dollars or by imprisonment in jail not exceeding one year, or by both such fine and imprisonment in the discretion of the Court.

Section 4. This Order shall take effect on and after thirty days from its publication in THE CANAL RECORD.

WOODROW WILSON.

THE WHITE HOUSE,
August 7, 1913.

[No 1810.]

PERSONAL.

Mr. Edward J. Williams, whose resignation as Disbursing Officer of the Canal Commission becomes effective on August 30, sailed for the United States, accompanied by his family, on the *Allianca*, on Tuesday, August 19. He assumed the duties of Disbursing Officer on November 23, 1905, and prior to coming to the Isthmus had filled various offices of trust, including paymaster and traveling auditor of the Chicago and Northwestern Railway, and comptroller of the city of Evanston, Ill. He is a native of West Salem, Wisconsin, and will spend a few weeks in that vicinity before taking up his permanent residence in New York City, where he will become connected with the Interborough Rapid Transit Company.

To Investigate Greenheart Timber.

Mr. C. D. Mell, in charge of wood structures in the Forest Service of the Department of Agriculture at Washington, has been detailed to go to Demerara to ascertain if genuine greenheart timber can be found there in sufficient quantities and proper sizes. He will make the trip via the Isthmus, and will probably be accompanied from here by a representative of the Canal Commission. If enough of the true greenheart can be obtained, it is purposed to use it on the Isthmus in the construction of dry dock keels, etc.

Sailing of the "Cristobal."

The sailing date of the steamship *Cristobal* has been set for Tuesday, August 26, at 3 p. m., from pier No. 11, Cristobal.

Married.

BRIGNAC-COOK—At the Union Church, Cristobal, on July 14, Miss Lena May Cook of Crystal Springs, Miss., to George Bamas Brignac of French Settlement, Louisiana, the Rev. Carl H. Elliott officiating. Isthmian residence, Colon.

LOST—Five-dollar bill on 11 p. m. train out of Panama on Sunday, August 17. Reward, if returned to F. D. Hurwitz, Culebra, C. Z.

CANAL WORK IN JULY.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., August 16, 1913.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of July, 1913:

Effective July 1, 1913, the timekeeping work and personnel which was partially centralized in the Department of Examination of Accounts on December 26, 1912, was transferred to the Fourth Division of the Office of the Chief Engineer.

Department of Construction and Engineering.

The following table summarizes the principal items of work accomplished by the construction divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	2d Div.	5th Div.	6th Div.	Total.
Work excavation, dry.	Cubic yds...	17,756	924,800	87,230	168,741		1,198,527
Work excavation, wet.	Cubic yds...		*112,900	†231,105		1,678,878	2,022,883
Total work excavation	Cubic yds...	17,756	1,037,700	318,335	168,741	1,678,878	3,221,410
Plant excavation, dry.	Cubic yds...		‡19,500	1,058			20,558
Total Canal excavation	Cubic yds...	17,756	1,057,200	319,393	168,741	1,678,878	3,241,968
Material placed in dams	Cubic yds...	91,885			9,560		101,445
Concrete placed, locks, dams and spillways.	Cubic yds...	4,944			12,448		17,392
Explosives used	Tons (Gross)	17.72	98.49	14.07	16.41	42.00	188.69
Rock drilled	Feet	11,681	170,157	45,602	73,440	17,675	318,555
Tracks removed	Miles	0.74	6.75	10	1.41		9.00
New track laid	Miles	1.12	12.62				13.74
Rock crushed	Cubic yds.				31,932		31,932
Cement used	Barrels		70	8,267	10,156	35	18,528
New roads built	Miles				10,156		
Water mains laid	Feet	1,400					1,400
Sewers laid	Feet						
Open drains and ditches dug	Feet			3,640			3,640
Average daily force		3,265	6,981	2,561	4,580	2,363	19,750
Average rainfall	Inches	12.43	6.12	4.22	6.80	4.22	7.26

*Removed by Fifth Division for Central Division.

†Removed by Sixth Division for the Second Division.

‡Fourteen thousand, one hundred cubic yards removed by Sixth Division in Central Division.

First Division, Office of the Chief Engineer.

LOCK GATES AND PROTECTIVE DEVICES.

The status of the work in the several locks may be summarized, as follows:

Gatun—Work was in progress on all the leaves, 40 in number: Erection, 99.4 per cent completed; reaming, 99.9 per cent completed; riveting, 99.2 per cent completed; finishing, 78.1 per cent completed.

Pedro Miguel—Work was in progress on the entire 24 leaves: Erection, 98.4 per cent completed; reaming, 99.5 per cent completed; riveting, 96.5 per cent completed; finishing, 70.4 per cent completed.

Miraflores—Work was in progress on all of the 28 leaves: Erection, 95.1 per cent completed; reaming, 96.5 per cent completed; riveting, 84 per cent completed; finishing, 46.8 per cent completed.

ERECTION.

On August 1, about 99 per cent of the total tonnage of lock gate material in all locks had been erected, of which about two per cent was erected during the month. There are still to be erected 423 tons at Gatun, 174 tons at Pedro Miguel, and 861 tons at Miraflores.

INSPECTION AND ERECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

Valve machines—The present status of the mechanical erection is, as follows: Rising

stem valve machines, 95 per cent completed; cylindrical valve machines, 100 per cent completed; auxiliary culvert machines, 100 per cent completed. The electrical installation of the above machines is 42 per cent complete for the rising stem valve, 45 per cent for the cylindrical valve, and 62 per cent for the auxiliary culvert valve machines. The mechanical erection of the 18 guard valve machines is 52 per cent complete.

Miter gate moving machines—Eighty-seven per cent of the mechanical, and 22 per cent of the electrical installation, is accomplished.

Miter gate forcing machines—The mechanical erection is 17 per cent, and the electrical erection, 18 per cent complete.

Tracks—Forty-eight per cent of all track has been completed with concrete and conductor slot, and 27 per cent more has been distributed and bolted up ready for concreting and finishing. Twenty-five per cent of

wire is 55 per cent, of stranded copper wire 52 per cent, and of anchors for transmission line towers 68 per cent complete. Surveys have been made over 10 miles of track, and a total of 69 foundations have been placed for track-span bridges to carry transmission line.

EMERGENCY DAMS.

All work in the United States in connection with the manufacture and inspection of emergency dam material is complete, and all material has been shipped. About 3,813 tons of material were delivered during the month, and 1,481 tons were erected. The status of the work on the several dams is, as follows:

Gatun east dam—This dam has been completed, tested, and accepted.

Gatun west dam—With the exception of the final coat of paint, this dam is complete. Final tests are in progress.

Pedro Miguel west dam—There are 2,330 tons of material on the site. During the month, 185 tons of structural material and turning and wedging machinery were assembled and bolted in place. Erection of the operator's house was begun. The field riveting is finished. The field coat of red lead paint has been applied, and the application of the final coat of gray paint begun.

Pedro Miguel east dam—There are 2,330 tons of material on the site. During the month, 470 tons of structural material and turning and wedging machinery were assembled and bolted in place. Placing of the concrete in counterweight, and the placing of concrete in the horizontal truss, were completed during the month. Installation of the gate and girder hoisting machinery is still in progress. Riveting is approximately 99 per cent completed.

Miraflores west dam—There are 1,863 tons of material at the site. During the month, 300 tons of structural material and turning and wedging machinery were assembled and bolted in place.

Miraflores east dam—There are 1,950 tons of material at the site. During the month, 526 tons of structural material and turning and wedging machinery were assembled and bolted in place. Riveting is about nine per cent completed.

Of the material required for all emergency dams, about 99 per cent has been delivered on the Isthmus, and approximately 76 per cent has been erected.

AIDS TO NAVIGATION.

During the month, work was in progress completing tower No. 27, Gatun Lake section, constructing tower for water stage register for the Second Division at Gamboa, clearing land for the Sixth Division in the vicinity of Mamei, clearing land in the Atlantic Division for electric pole lines and erecting poles, and making the necessary surveys and reconnaissances in connection with the construction of range towers, targets, beacons, etc.

Second Division—Office of the Chief Engineer.

SHOPS.

The designing and preparation of drawings for foundations, motorizing of machines, installation of stringers, shafting, and motors for group drives, illumination, and power distribution systems, and the completion of the designing of the various buildings were continued. The incorporation of architectural features in the designs of those buildings that are totally enclosed was commenced. The system of distributing electrical power the in

single, and 33 per cent of double crossovers, have been placed.

Spillway gate machines—The mechanical erection is 69 per cent, and the electrical erection, four per cent completed.

Pumps—Mechanical installation is 42 per cent complete on miter gate sump pumps, eight per cent complete on chain fender sump pumps, and seven per cent on drainage sump and culvert pumps. Electrical installation is 14 per cent completed on miter gate sump pumps.

Transformer room equipment—At the close of the month, work was 63 per cent complete at Gatun, 46 per cent at Pedro Miguel, and 29 per cent at Miraflores.

Hydroelectric station—Electrical work on switchboards was started during the month, but only a small force is necessary to keep pace with the building construction.

Cable—Out of a total of 2,412,130 feet of cable on order, 560,602 linear feet have been pulled into the ducts.

Control houses—Sixty-five per cent of the steel beams for control house floors have been placed in concrete. The control house at Gatun is ready to receive the roof.

Illumination—At Gatun, the erection of the concrete lamp posts is 62 per cent completed. At Pedro Miguel, 13 per cent of the total number have been erected.

Transmission line—Delivery of copper-clad

foundry, and in the machine and erecting shops was completed, and the design for the distribution of power in the boiler and forge shops was commenced. The interior illumination system for the foundry and pattern storage building was completed, and studies for this system in the machine and erecting shops, forge shop, boiler shop, and permanent administration building were advanced. Specifications were prepared and requisition submitted for all piping for water, steam, fuel oil, compressed air, and sewer, to be installed in the pipe and conductor tunnel; for metal lath, reinforcing fabric, etc., for exterior walls for other buildings; for locks, bolts, sash pivots, and other hardware for doors and windows; for one 70-foot turntable; for structural steel for pattern racks; wire screen partitions for offices, toolrooms, etc., and for cloth pinions for motors. All of the steel for the forge shop and the boiler shop, and all steel for shafting supports in the erecting shop was delivered on the Isthmus, and in addition thereto, 87 per cent of the general storehouse and 40 per cent of the galvanizing plant. The following percentages of the steel in the several buildings were erected during the month: Machine and erecting shop, 75.2 per cent; steel storage building, 23 per cent; boiler shop, two per cent; foundry, four per cent. The riveting on the foundry was advanced by 54 per cent. During the month, 42 squares of gutter tile, 906 squares of standard tile, 51 squares of special tile, 1,913 pieces of skylight tile, and 900 linear feet of ridge tile were manufactured. All the tile on the foundry, and 94.3 per cent of that on the planing mill, was erected. Of the 57 machines to be installed in the planing mill, 39 were installed, and 23 put in operation during the month.

Excavation and construction—During the month, 80,406 cubic yards of excavation were performed by steamshovels; 45,602 linear feet of hole were drilled, and 31,515 pounds of dynamite used; 2,918 linear feet of caisson were sunk for the docks substructure, and 198 feet of 4-foot steel caisson for shop foundations; 6,214 cubic yards of concrete were placed in docks and shop foundations, machine footings, floors, and walls; 13,254 linear feet of track were laid, 5,470 feet were removed; and 44,939 linear feet of piles were driven.

Fifth Division—Office of the Chief Engineer.

DISTRICT NO. 1—LOCKS, DAMS, AND DRY EXCAVATION.

Excavation—The total excavation amounted to 169,541 cubic yards, of which 115,054 cubic yards were classified as rock, and 54,487 cubic yards as earth.

Filling and embankment—Dry filling in the prism of the west dam at Pedro Miguel was increased by 1,210 cubic yards, the total amount of material used for this purpose being 697,768 cubic yards. The backfill at Pedro Miguel was increased by 6,880 cubic yards, the total quantity in place at the close of the month being 1,020,203 cubic yards. At Miraflores, dry filling in the west dam was increased by 8,350 cubic yards, making the total quantities of dry and hydraulic filling in place at the close of the month 1,668,349 cubic yards, and 661,048 cubic yards, respectively. The backfill at Miraflores was increased by 149,511 cubic yards, the total quantity in place on July 31 being 1,821,738 cubic yards.

Pedro Miguel Lock—One steamshovel was operated in the excavation in the prism south

of the locks, the clay being used for filling the core in the junction of the Miraflores west dam with the west lock wall. During the latter part of the month, a steamshovel started the excavation of the dikes, or high ground, in the forebay of the Miraflores locks. Hard shovel rock was supplied from the Ancon quarry for riprapping the southwest wing wall, the northwest wing wall, and junction with the west dam. Concrete work consisted in the construction of lamp post bases and snubbing button piers along the side walls, and the completion of the concrete control house up to the second floor. The installation of the pile supports for the buffers at the ends of the north and south guide walls was completed, and the filling was placed around the bases of the piles at the end of the north guide wall.

OPERATION OF THE AUXILIARY CONCRETE CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours).....	8.00
Average number of hours per day worked laying concrete, actual working time....	3.00
Average number of mixers per day.....	.42
Average hourly output per mixer, actual working time (cubic yards).....	7.56
Concrete laid (cubic yards).....	750.00

One $\frac{1}{2}$ -yard mixer was in service intermittently; 159 cubic yards of concrete were mixed by hand.

Miraflores Locks—Dry excavation was continued in the prism south of the locks, and the material taken out used principally for back-filling the wing walls, and filling the toes in the junction of the west dam with the locks; also, for filling the north and south guide walls and the lower middle lock wall. The filling of the south guide wall was completed during the month. Concrete work for the spillway was continued. The dam proper was completed, and all the piers were well under way at the close of the month. Concrete work in the locks consisted in the installation of lamp post and snubbing button bases, and miscellaneous trimming up. Contracts were let for the dismantling and loading on cars of chamber cranes Nos. 1 and 3, and berm cranes "G" and "H," and the work of dismantling chamber crane No. 1 was begun on July 26. The fixed iron placed in the masonry during the month amounted to 330,418 pounds. General cleaning up in the locks and the clearing out of all pumps, buildings, tracks, etc., was started on the west side, with the view of blowing up the dike across the canal south of the locks by August 20.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours).....	8.00	8.00
Average number of hours per day worked laying concrete, actual working time.....	.98	7.10
Average number of mixers per day.....	2.00	1.69
Average hourly output per mixer, actual working time (cubic yards).....	30.47	17.99
Average amount of concrete laid per hour per berm or chamber crane, actual working time (cubic yards).....	26.26	.....
Total concrete laid (cubic yards).....	1,342.00	7,845.00

Permanent plant—Average number of mixers per day.....	2.00
Average number of berm cranes per day..	1.00
Average number of chamber cranes per day	0.58
Auxiliary plant—Average number of $\frac{1}{2}$ -yard mixers per day.....	0.23
Average number of 1-yard mixers per day..	1.46
Average number of locomotive cranes and derricks per day.....	2.73

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.	
Length of working day (hours).....	8.00, 12.00
Average number of hours per day, actual working time.....	6.97
Average number of cubic yards crushed per hour per working day.....	180.40
Average number of cubic yards crushed per working hour.....	254.50
Total output for the month (cubic yards)...	31,932.00

12-hour day from 1st to 7th. Crushers shut down for repairs from 9th to 12th, inclusive, and from 18th to 22d, inclusive.

DISTRICT NO. 5—GOLD HILL SLUICING PLANT.

Excavation during the month totaled 112,900 cubic yards. The cut at the north flume was brought down to grade and pushed into the hill and out under the active slide, and, in the part which was cut, it stopped movement of the sliding surface material toward the Canal. Due in part to lack of material for flume extension, the low dump for the north flume caused inconvenience. At the south flume, an effort was made to extend the flume cut as far toward the upper back part of the active slide as possible; about 300 feet at grade was accomplished. Hard rocks at this flume gave trouble early in the month, and a good many required shooting. A hand cut for the middle flume was made from the dump end to the face of the bank to be cut, a distance of about 200 feet. An additional wire screen cage was installed around the spillway pipes, in order to prevent water plants from clogging the pipes. The water in the lake reached to within 18 inches of spillway level.

Sixth Division—Office of the Chief Engineer.

PACIFIC END.

Seven dredges were engaged in channel and inner harbor excavation at Balboa, removing 446,878 cubic yards of earth, and 310,052 cubic yards of rock, from the Canal prism; and 231,105 cubic yards of earth from the inner harbor and terminal basin site, a total of 988,035 cubic yards. At the close of the month, there remained to be removed from the Canal prism, 2,857,947 cubic yards. The French ladder dredge *Gopher*, engaged in sand excavation at Punta Chamé during the entire month, removed 25,572 cubic yards.

ATLANTIC END.

Nine dredges were in operation during the month, removing 852,607 cubic yards of earth, and 69,341 cubic yards of rock, from the Canal prism. In addition, 18,286 cubic yards of earth, and 16,015 cubic yards of rock from the French canal at bridge crossing south of the dry dock; 4,375 cubic yards of earth from between piers Nos. 1 and 2, Colon, and 130,359 cubic yards of coral sand from Margarita Bay, were taken out. On July 31, there remained to be excavated 1,299,176 cubic yards. On July 31, forty feet of water could be carried from zero to zero plus 2,100 feet; 35 feet to mile post 6 plus 2,300 feet; 30 feet to mile post 6 plus 2,320 feet; 20 feet to mile post 6 plus 2,350 feet; 10 feet to mile post 6 plus 2,800 feet, at the barrier across the Canal.

Division of Municipal Engineering—Office of the Chief Engineer.

The municipal engineering work in the Canal Zone in charge of the Atlantic, Central, and Fifth Divisions, and similar work in the cities of Colon and Panama performed by the Division of Public Works, were consolidated, effective July 16, to form the Division of Municipal Engineering, under Mr. George M. Wells, resident engineer. The work of this

division was divided into four principal sections, as follows: 1. Northern District, covering all work from Gatun north, including the city of Colon, but exclusive of filtration plants. 2. Southern district, covering all work from Gorgona south, including the city of Panama, but exclusive of the construction of the new Panama water works and filtration plants. 3. Construction of the new Panama water works, including all work in connection with the building of the pump stations, purification plants, reservoirs, and the laying of new mains. 4. Operation and maintenance of filtration plants at Mount Hope, Gatun, and Ancon.

Atlantic Division.

GATUN LOCKS.

Excavation—For the foundation of the transformer substation, and for the spurtrack connecting it with the main line of the Panama railroad, the month's excavation totaled 14,734 cubic yards of earth.

Backfill—The total backfill placed during July amounted to 17,930 cubic yards. At the close of the month, the backfill was 96.26 per cent completed.

Receiving and issuing material—The issues of rock amounted to 6,533 cubic yards. Sand receipts amounted to 5,220 cubic yards, the issues to 3,490 cubic yards. Cement receipts totaled 3,710 barrels, and the issues amounted to 6,277½ barrels.

Concrete work—A total of 197 cubic yards of concrete was laid, distributed, as follows: Upper locks, 174 cubic yards; middle locks, two cubic yards; lower locks, 21 cubic yards.

On July 31, the locks concrete work was 99.91 per cent completed.

OPERATION OF CONCRETE CONSTRUCTION PLANT.

Length of working day (hours).....	8.00
Average number of hours per day worked, per strand of cableway, laying concrete, actual working time.....	.43
Average number of mixers per day.....	2.00
Average hourly output per mixer, actual working time (cubic yards).....	60.00
Average amount of concrete laid per hour, per strand of cableway, actual working time, (cubic yards).....	25.20
Concrete laid (cu. yds.), cableways.....	2,298
Concrete laid (cu. yds.), portable mixers.....	528
Concrete laid (cu. yds.), hand mixed.....	172

Total amount of concrete laid (cu. yds.).... 2,998.00

GATUN DAM.

Construction during the month increased the total fill, as determined by car measurement, 96,747 cubic yards, making the total amount in place 21,883,567 cubic yards. On August 1, the dam was 99.47 per cent completed.

Dry fill—Additions to the dry fill amounted to 91,885 cubic yards, which were placed on the north and south toes of the dam, east and west of the spillway, making the total dry fill in place 11,670,153 cubic yards.

GATUN SPILLWAY.

Concrete laid during the month amounted to 1,513 cubic yards, making the total in place 225,645 cubic yards. Concrete work was 98.53 per cent completed at the close of the month.

Hydroelectric plant—In preparing foundations, 25 cubic yards of rock were removed by hand, making a total excavation of 98,776 cubic yards. During the month, 683 cubic yards of concrete were placed, making a total of 5,751 cubic yards.

WEST BREAKWATER—COLON.

Out of a total of 23,772 cubic yards of Porto Bello rock placed on the breakwater

during July, 8,727 cubic yards were unloaded by cranes, and 15,045 cubic yards by derrick barges. The total amount placed upon the breakwater to August 1 was 272,667 cubic yards.

Central Division.

The total amount of material excavated during the month was 944,300 cubic yards, of which 208,831 cubic yards were classified as earth, and 735,469 cubic yards as rock. The entire amount was removed by steamshovels, 924,800 cubic yards being classified as primary excavation, and 19,500 cubic yards as plant excavation. Of the total primary excavation, 270,000 cubic yards were taken from within the lines of the Canal prism, and 654,800 cubic yards from without the Canal prism, the latter amount being excavated from slides and from high levels as a preventive measure against slides.

The daily average number of steamshovels at work was 40.74, and the total number of shovel days was 1,018, as compared with 38.28 shovels at work, at 957 shovel days in June. For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table is presented:

Period	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W kg days.	Av. yards per shovel day.
		Rock.	Earth.			
1912: July.	Cu. Yds. 1,335,590	Cu. Yds. 1,077,219	Cu. Yds. 258,371	38.71	26	C. Y. 1,327.73
1913: July.	944,300	735,469	208,831	40.74	26	928.00

Rainfall at Empire: 1912, 9.15 ins.; 1913, 4.87 ins.

The estimated amount of material removed, and to be removed, according to the revision of July 1, 1913, is 115,696,455 cubic yards. Up to August 1, 1913, 108,121,255 cubic yards had been removed, leaving 7,575,200 cubic yards to be removed, in order to complete all excavation in this division. At the close of the month, 93.45 per cent of all excavation was completed. On July 31, the status of the work in the two sections which compose this division was, as follows:

CULEBRA CUT.		Cubic yards.
Dry excavation accomplished.....	95,736,600	
Excavation to be accomplished.....	7,425,200	

CHAGRES SECTION.

Dry excavation completed.....	12,384,655
Wet excavation to be accomplished.....	150,000

Deliveries of 4,131 cubic yards of spoil were made to Quebrancha siding on the Panama railroad, to be used for reinforcing the slopes and raising the grade of the Quebrancha and Brazos embankments. Spoil furnished for the Cristobal mole during the month amounted to 350 cubic yards; the total amount furnished for this purpose aggregates 227,625 cubic yards. Material dumped from the Naos Island trestle during the month totaled 49,476 cubic yards.

The daily average number of laborers at work was 6,374, while the average number of gold men working was 607.

Quartermaster's Department.

LABOR.

Labor—The force report of July 23 showed 38,794 men actually working for the Commission and the Panama Railroad Company. The actual working forces of the several contractors totaled 3,705 men. There was very little demand for labor until just at the close of the month, when requests were received from the Division of Municipal Engineering. The

Quarantine Office reports an excess of emigration over immigration during the month of almost 1,000.

Buildings—Seven structures were demolished. The removal of buildings from Gorgona and their reerection at other points, as well as the raising and moving of buildings at Pedro Miguel, progressed rapidly. Construction work was completed on 25 buildings.

Quarters—On the last day of July, eleven families remained in married quarters at Gorgona, and provision has been made for them in other districts. The number of applications for family quarters increased slightly.

Material and supplies—The value of material received was \$1,200,363.44. This material came forward in 39 steamers, the total weight of cargo, exclusive of lumber, piling, and ties, being 20,816 tons.

The abandonment of Gorgona and the transfer of the shops to Balboa demanded the removal of the material storehouse from the former to the latter point. The advanced state of the work justified the discontinuance of issues from the Miraflores storehouse and the transfer to Mount Hope, of a portion of the stock carried at Gatun.

Subsistence Department.

The Hotel Tivoli was operated at a profit of \$3,211.74. The operation of the line hotels, laborers' messes, and restaurants resulted in a net profit of \$93.94. The total net profit on subsistence operations during the month was \$3,305.68.

Department of Civil Administration.

COURTS.

During the month, 44 civil and 45 criminal cases were disposed of in the Circuit Courts, and 57 civil and 481 criminal cases in the District Courts.

POSTS, CUSTOMS, AND REVENUES.

Money order sales amounted to \$400,093.26, and the fees to \$1,906.90. Receipts from stamp and card sales and newspaper postage aggregated \$8,926.42. The total collection of revenues was \$22,522.46, and the collections on account of court fines, costs and fees \$2,424.95. A total of \$183,936 was deposited in postal savings accounts, and a total of \$192,471 was withdrawn. At the port of Ancon, 21 vessels entered and the same number cleared; at the port of Cristobal, 26 entered and 24 cleared.

POLICE AND PRISONS.

The total number of persons arrested was 501, of whom 453 were men, and 48 women. Thirteen convicts were committed to the penitentiary and eight were discharged, leaving 138 convicts in confinement at the close of the month. The cost of guarding and subsisting these prisoners was \$2,372.82, and the value of the work performed by them on the roads of the Canal Zone was \$2,358.50.

FIRE PROTECTION.

Eight fires were reported in the Canal Zone. The property involved was estimated to be worth \$11,675. The damage occasioned was \$10.

PUBLIC WORKS.

Effective July 16, the Division of Public Works was transferred to the Division of Municipal Engineering.

Department of Sanitation.

The total number of deaths from all causes among employes was 37, divided, as follows:

From disease 26, and from violence 11, giving an annual average per thousand of 5.38 and 2.28, respectively. The annual death rate per thousand among employes for the month of July, 1912, was 10.34.

The annual average death rate per thousand in the Canal Zone, and in the cities of Panama and Colon, including both employes and nonemployes, was 24.86. This rate is based upon a population in the Canal Zone of 62,810 according to the census of February, 1912, and populations in Panama and Colon, respectively, of 47,172 and 20,232, as estimated by the Department of Sanitation. The annual average death rate per thousand among the same classes of population for the month of July, 1912, was 23.55.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was: Whites, 1.95; blacks, 6.31, giving a general average for disease of 5.38. For the same month during 1911, the annual death rate per thousand from disease among whites was 10.37; blacks, 10.27, giving a general average of 10.29; and for the same month during 1912, whites, 6.98; blacks, 8.18, giving a general average of 7.88.

Among employes, deaths from the principal diseases were: Dysentery, two; lobar pneumonia, five; malaria fever, two; tuberculosis, seven; typhoid fever, one, leaving nine deaths from all other diseases, and 11 deaths from external violence. No case of yellow fever, smallpox, or plague originated on, or was brought to the Isthmus during the month.

Respectfully,

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Storage for Retired Canal Equipment.

The report of the committee, consisting of Mr. H. S. Farish, chairman; Mr. A. E. Bronk, and Mr. Charles L. Parker, appointed to consider plans for storing Canal Commission equipment after its use for construction purposes is no longer necessary, and pending its disposal by sale or otherwise, has been approved.

In view of the contemplated abandonment of the towns on the west side of the Canal between Gorgona and Pedro Miguel, it was deemed advisable to consider only tracks on the east side adjacent to the Panama railroad. The committee inspected the tracks in Gamboa yard, the tracks on the relocation dumps of the Central Division, and those in Cristobal yard. As the Cristobal shops have been reopened by the Mechanical Division, the tracks at that point are no longer available. In the Gamboa yard, allowing for a ladder track and the necessary clearances at switches, there are a little over 5,000 feet of track, practically all of which can be used. Allowing for clearances at switches, and assuming that a sufficient number of switches can be left on the Panama railroad main line, there are a little over 36,000 feet of track in the yard and approaches to the relocation dumps of the Central Division between Gamboa Cabin and dump No. 7. In addition, there are 27,000 feet of track on the dumps proper.

It was the opinion of the committee that if it is impossible to procure sheltered storage space for steamshovels, locomotives, cranes, piledrivers, and other equipment of this kind, that the arrangement of tracks in the Gamboa yard would make the best place to store this

equipment, especially as less switching would be required to get at any particular piece. The 36,000 feet of track on the relocation dumps can be used in storing various classes of equipment, and tracks on the dumps may be utilized for storing cars. It is believed that tracks can be provided at these points for all rolling stock as fast as it is retired from service.

Motor Boats for Dredging Service.

Award has been made to the Welin Marine Equipment Company of New York for three motor boats, two 40 feet, and one 45 feet in length, at \$7,182 each for the shorter vessels, and \$7,823 for the longer one, an aggregate price of \$22,187. Several other bids were received. The Welin Marine Equipment Company agree to make delivery of one of the 40-foot craft in 130 days, the second in 160 days, and the 45-foot boat in 100 days.

The boats are designed for use by the Sixth Division in connection with future dredging operations in the Canal; they will be faster than any now in service, and with expedite inspection and communication along the 47 miles of channel in which the dredges will operate. The 40-foot boats are to have an 8-foot beam, 3-foot draft, and are to be of heavy construction for rough service, and capable of attaining a speed of 16 knots an hour. Their hulls are to be of southern cedar planking, copper-fastened and copper-covered to six inches above the water line, with frames of white oak. The interiors are to be finished in yellow pine. The equipment, in part, is to consist of a large capacity gasoline tank and electrical apparatus for lighting, including a searchlight. All hardware is to be of solid bronze.

The 45-foot vessel is to have a 9-foot beam, 3-foot draft, and in addition to the requirements for the 40-foot boats, is to be provided with a compartment containing locker and two bunks for crew's quarters, a galley, refrigerator, dishrack, table, and seats. Each boat will carry a short signal mast.

Kerosene and Gasoline.

The contract for supplying kerosene and gasoline to the Canal Commission for the period beginning June 24, 1913, and terminating June 30, 1914, has been awarded to The Texas Company of New York, as follows: In cans and cases, two 5-gallon tins to the case, 100,000 gallons of kerosene at \$0.169 a gallon; 50,000 gallons of gasoline, 62 degree Baumé, at \$0.318 a gallon. In steel drums of 55 gallons capacity each, 100,000 gallons of kerosene at \$0.102 a gallon, and 50,000 gallons of gasoline at \$0.254 a gallon.

Postal Service at Matachin.

Matachin was discontinued as a postal money order office on July 31, and on that date, the receipts and deliveries of mail were turned over to the station agent, who, in addition to his other duties, will look after the postal business until railroad communication with the town is broken. The money order records, formerly at this point, have been deposited with the postmaster as Bas Obispo to whom inquiry regarding money orders issued at or drawn on Matachin should be addressed. It is probable that the postal service at Matachin will be entirely discontinued by the end of the month, as nearly of all the American employes have been transferred, and the place is being vacated by the native population.

TOWING LOCOMOTIVES.

Tests Made of Trial Machines Suggested Some Modifications.

Tests of sample double truck towing locomotive, No. 640, conducted at Gatun Locks, demonstrated that the machine is not satisfactory in all respects. Under the proposal of the General Electric Company to furnish a trial locomotive built from the Commission's design, and 39 others of the same type, if it should prove satisfactory, the Commission reserved the right to change to the alternative single truck design submitted by and bid on by the contractor. Award has now been made for 40 locomotives of the alternative type, with certain modifications, which the recent tests have shown to be desirable.

The principal defects found in the trial machine were, as follows:

1. The unreliable action of friction intended to prevent the drum from turning until the desired pull had been reached.

2. The narrowness of the winding face of the slip drum, which has the width of only two diameters of rope, and which, therefore, caused the layers of rope to overlies each other unevenly, and through violent slipping, to injure the rope, as well as prevent the use of as long a line as had been recommended by the Naval Advisor.

3. The vibration due to the uneven surface of the rack rail against which the thrust wheels bear, which hold the locomotive to the track under the horizontal pull of the line.

4. Failure of the pinion to engage, without shock, in the approach racks placed at the point where the speed of the locomotive changes from the return speed to the towing speed.

Under the award, the contractor will furnish the alternative type of locomotive as originally proposed, inclusive of the following modifications:

1. Omission of solenoid operating clutches and friction gear.
2. Addition of hand operating clutches.
3. Addition of equalized hand brakes.
4. Fitting springs to thrust guide wheel.
5. Change in windlass.

The above will make a net addition in the cost of each locomotive of \$1,543, allowing for a deduction of \$324 for each locomotive for omission of clutches. The total net cost of each machine under the award will be \$13,217, or a grand total of \$528,680 for the 40 locomotives.

The contractor has promised to make delivery of the first locomotive in seven months from the date of the order, and of the remaining 39, at the rate of four a month.

Examination by Board of Local Inspectors.

The Board of Local Inspectors will conduct examinations at the Administration Building, Ancon, on Wednesday, August 27, 1913, beginning promptly at 2 p. m., for persons desiring to procure the following classes of licenses: Pilots, masters, mates, marine engineers, chauffeurs, and navigators of motor boats. All applicants for licenses must procure from the Executive Office, Ancon, forms of application and information respecting the filling out of same, at least one day before the examination. Applicants for chauffeurs' licenses must also bring automobiles with them.

LOST.—Probably at Hotel Washington, a fraternity signet ring, having on it a Maltese Cross, with skull and cross-bones, and Greek letters, "Phi Kappa Sigma." "S. C. K." and Greek letter "Psi," engraved inside. Reward, if returned to Spencer C. King, Empire, C. Z.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION. TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION. [All figures are of work useful for the completed Canal.]

DRY EXCAVATION. CENTRAL DIVISION.

M'THS.	CULEBRA SECTION.*								CHAQUES SECTION.**							
	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.			
Jan.	170,990	566,750	1,227,022	1,150,249	1,323,693	1,356,399	1,416,035	1,135,540	399,399	175,802	255,985	28,357				
Feb.	168,410	589,117	1,248,265	1,194,454	1,259,173	1,409,338	1,349,569	996,810	450,182	286,309	219,550	66,145				
March	238,178	815,270	1,290,585	1,434,597	1,509,728	1,728,738	1,539,618	1,183,900	619,491	484,846	297,335	172,607				
April.	211,177	879,527	1,242,574	1,272,746	1,288,545	1,414,336	1,455,216	1,780,000	510,020	428,777	102,107	171,731				
May.	196,209	691,365	960,840	1,126,963	1,099,279	1,299,100	1,405,760	921,000	386,170	248,974	29,783	12,524				
June.	212,623	624,586	1,134,032	1,242,134	1,305,141	1,401,016	1,348,780	865,283	275,990	164,389	32,285	8,424				
July.	159,739	707,570	1,213,325	1,200,828	1,153,810	1,337,402	1,094,132	1,037,700	233,897	166,106	22,284	776				
August	244,723	786,866	1,171,927	1,173,370	1,377,714	1,442,402	1,094,132	1,037,700	233,897	166,106	22,284	776				
Sept.	291,452	783,468	1,122,860	1,235,978	1,330,948	1,340,173	922,712	1,037,700	233,897	166,106	22,284	776				
Oct.	327,019	834,489	1,160,101	1,302,901	1,320,314	1,306,971	922,712	1,037,700	233,897	166,106	22,284	776				
Nov.	221,642	790,632	1,022,576	1,070,792	1,209,554	1,209,498	973,071	1,037,700	233,897	166,106	22,284	776				
Dec.	307,689	1,025,485	1,210,046	1,152,022	1,211,400	1,351,082	1,074,510	1,037,700	233,897	166,106	22,284	776				
Totals.	2,702,991	9,177,140	3,912,453	14,557,034	15,398,599	16,596,891	15,075,413	7,318,263	3,752,402	3,153,660	1,037,164	460,564				

ATLANTIC DIVISION.†

Mos.	GATUN LOCKS, DAM AND SPILLWAY.††												MIRAFLORES LOCKS, DAMS AND SPILLWAY.††											
	1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.	1913.	1909.	1910.	1911.	1912.
Jan.	102,690	125,011	65,829	1,330	46,773	83,726	27,320	15,690	24,969	1,147	61,202	31,479	48,744	95,609	26,483	54,114	15,300	12,936	47,426	51,847	54,114	15,300	12,936	47,426
Feb.	95,081	125,738	50,511	1,238	11,241	98,242	9,486	6,809	18,480	448	53,689	15,300	12,936	47,426	51,847	54,114	15,300	12,936	47,426	51,847	54,114	15,300	12,936	47,426
Mar.	90,051	132,907	51,433	1,254	15,718	95,624	6,784	6,774	1,777	800	51,417	18,184	72,739	28,352	28,700	51,847	18,184	72,739	28,352	28,700	51,847	18,184	72,739	28,352
Apr.	70,079	108,248	27,134	21,619	27,134	100,365	91,299	25,513	13,269	620	60,060	12,148	79,751	29,084	23,255	68,296	12,148	79,751	29,084	23,255	68,296	12,148	79,751	29,084
May	32,736	82,988	17,677	24,265	24,265	57,523	10,405	5,905	26,018	127	47,588	20,250	57,975	13,066	3,778	53,215	20,250	57,975	13,066	3,778	53,215	20,250	57,975	13,066
June	36,356	82,988	17,677	24,265	24,265	70,971	8,430	7,454	7,754	936	55,653	21,984	38,023	7,906	100,991	55,653	21,984	38,023	7,906	100,991	55,653	21,984	38,023	7,906
July	35,085	82,988	17,677	24,265	24,265	77,503	4,210	6,273	4,412	.....	50,999	11,980	97,884	4,532	87,230	50,999	11,980	97,884	4,532	87,230	50,999	11,980	97,884	4,532
Aug.	40,346	82,988	17,677	24,265	24,265	58,355	12,789	6,220	4,866	.....	35,446	17,548	102,249	7,120	.....	35,446	17,548	102,249	7,120	.....	35,446	17,548	102,249	7,120
Sept.	49,945	108,737	3,489	1,025	.....	48,825	10,405	3,472	1,613	.....	31,903	8,590	96,112	5,192	.....	31,903	8,590	96,112	5,192	.....	31,903	8,590	96,112	5,192
Oct.	37,321	108,737	3,489	1,025	.....	40,825	7,433	3,365	1,287	.....	25,349	9,850	107,790	14,107	.....	25,349	9,850	107,790	14,107	.....	25,349	9,850	107,790	14,107
Nov.	63,452	94,582	.....	2,203	.....	20,207	10,636	12,962	2,408	.....	18,644	9,400	84,894	27,728	.....	18,644	9,400	84,894	27,728	.....	18,644	9,400	84,894	27,728
Dec.	96,530	72,030	16,677	.....	.....	26,342	11,195	17,320	3,176	.....	20,063	17,906	79,480	30,319	.....	20,063	17,906	79,480	30,319	.....	20,063	17,906	79,480	30,319
Totals..	793,835	1,235,234	235,952	97,410	14,341	739,355	128,412	82,399	110,039	4,078	511,933	194,639	878,577	310,481	82,216	447,976	511,933	194,639	878,577	310,481	82,216	447,976	511,933	194,639

*Total to Aug. 1, 1913, 95,849,500 cubic yards. Excavated 1904, 243,437 cubic yards; 1905, 914,254; by sluicing, 170,174 cu. yds.
†Dry excavation Mendi Hills 1907-1912, 21,96,198 cubic yards.
††Excavated various points in prism to Aug. 1, 1913, 4,680,902 cu. yds.; Balboa Locks and Dams, 1907, 78,233 cu. yds.; Outside prism 1908, 172 cu. yds.
‡Total to Aug. 1, 1913, 6,680,140 cubic yards; including 26,628 cu. yds. in 1906; 1,340,179 cu. yds. in 1907; 2,774,561 cu. yds. in 1908.
†††Total to Aug. 1, 1913, 1,321,063 cubic yards; including 256,780 cu. yds. in 1908.
‡‡Total to Aug. 1, 1913, 2,837,298 cubic yards; including 846,970 cu. yds. in 1908.
‡‡‡Total to Aug. 1, 1913, 7,67,07 cubic yards; including 318,731 cu. yds. in 1912.

WET EXCAVATION.

Mos.	ATLANTIC DIVISION.†										PACIFIC DIVISION.††										BALBOA TERMINALS**	
	ATLANTIC ENTRANCE.‡										PACIFIC ENTRANCE.‡‡										TERMINALS**	
	1908.	1909.	1910.	1911.	1912.	1913.	1908.	1909.	1910.	1911.	1912.	1913.	1908.	1909.	1910.	1911.	1912.	1913.				
Jan.	499,701	521,050	510,085	520,181	520,276	508,338	460,250	469,529	518,936	379,810	334,735	215,025					77,383	216,540				
Feb.	427,722	444,910	493,448	455,318	451,399	303,944	663,519	671,477	285,791	659,761	432,796	239,032					175,225	175,225				
Mar.	586,886	461,208	412,325	103,374	103,374	380,743	783,231	867,696	462,588	637,661	404,931	379,845					166,800	166,800				
Apr.	461,208	461,208	412,325	190,574	492,579	134,612	676,536	720,757	534,322	439,622	383,995	356,942					182,175	182,175				
May	464,396	470,635	190,574	492,579	249,632	68,168	570,466	731,753	454,509	548,047	384,310	364,703					194,510	194,510				
June	572,746	192,578	485,021	452,098	343,504	514,525	656,621	844,685	475,486	576,100	338,016	604,080					28,668	31,179				
July	625,497	348,451	423,092	425,198	495,398	921,948	696,172	733,181	515,782	520,697	392,511	755,930					39,618	231,105				
Aug.	638,217	422,846	508,394	367,456	429,415		757,774	623,563	506,968	630,241	441,089						131,251	441,089				
Sept.	664,776	410,574	429,454	429,454	572,502		750,980	790,920	467,873	339,224	438,726						10,591	438,726				
Oct.	570,382	457,589	610,708	742,343	670,247		699,089	627,791	495,870	346,189	534,273						1,6194	13,809				
Nov.	679,604	482,370	533,409	814,373			709,960	727,467	357,034	141,189	349,747						137,771	191,968				
Dec.	4,830,407	5,528,661	5,785,226	5,557,409	4,660,838		8,056,025	8,300,405	5,534,745	5,472,308	4,591,741	2,921,555					556	546,514				
Total	4,906,746	4,906,746	4,906,746	4,906,746	4,906,746	4,906,746	4,906,746	4,906,746	4,906,746	4,906,746	4,906,746	4,906,746	4,906,746	4,906,746	4,906,746	4,906,746	4,906,746	4,906,746				

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule of dates for moving pictures for the week August 25 to 30 is, as follows: Monday, Culebra; Tuesday, Empire; Wednesday, Corozal; Thursday, Cristobal; Friday, Porto Bello and Gatun.

The list of films for the week August 18 to 23 is, as follows: "The dam builder;" "Blind love;" "Gee! my pants;" "The new church organ;" "In the tents of Azra;" "Heart of Esmeralda;" "The wayfarers." The list of films for the week August 25 to 30 is, as follows: "Trials of a playwright;" "When she was about sixteen;" "Awakening of Jones;" "The old wedding dress;" "Ranger girls;" "A dangerous lesson;" "The new ranch foreman."

Judging from the interest taken by athletes in the athletic and aquatic meet at Corozal on Labor Day, it promises to be one of the most successful ever held in the Canal Zone. The following events are scheduled:

Track events—100-yard low hurdles; 220-yard dash; 880-yard run; relay race (four men); running high jump; running broad jump; 12-pound shot put; pole vault; tug-of-war; 60-yard dash for boys; relay race (four boys); three-legged race; fat men's race (200 pounds, or over).

Aquatic events—50-yard dash; 100-yard dash; one mile swim; canoe race, half mile (two men); obstacle canoe race (two men); canoe tilting; relay swimming race, 200 yards, (four men); fancy diving; equipment race; 50-yard swim for boys.

The athletic events will be held in the morning, and the aquatic events in the afternoon. There will be a special train carrying the spectators to and from the aquatic events. In addition to the entries received from Commission employees, there will be entries from members of the Tenth Infantry and United States Marine Corps.

The following artists from the United States have been engaged for the coming season: Alton Packard, cartoonist; Dr. Frederic Poole, moving picture lecturer; the Ernest Gamble Concert Company; Miss Gay Zenola MacLaren, and Walter Eccles and the Four College Girls. Negotiations are under way with several other companies. Mr. Packard is expected in September, and Dr. Poole in December. Other dates will be announced in the near future.

During the month of July, 41 entertainments were held, with a total attendance of 7,585. Eleven tournaments were in progress, in which 198 players were interested. Twenty-three thousand ninety-eight games of pool were played, and 9,672 games were bowled. Two thousand seven hundred and fifty books were withdrawn from the libraries; 632 men made use of gymnasium privileges during the month, and 86 were enrolled in Spanish classes.

COROZAL.

Workmen are engaged in getting the running track and athletic park in shape for the meet to be held on Labor Day, September 1. The running track is to be 12 feet in width, and there will be five laps to the mile. There will also be a straightaway track 15 feet wide, and 100 yards in length.

A large order has been placed with the publishers in the United States for a shipment of the latest books, fiction, and otherwise.

Interest continues in the Spanish class for boys which meets every week.

CULEBRA.

At the regular Sunday night song service, the devotionals were led by Mr. Heckelberry, a former resident of Culebra. As he is to leave this week for the United States, he made a few reminiscent remarks concerning his experiences on the Zone. Mr. John J. Winchester, a former resident of Culebra, now located with the General Electric Company at Lynn, Mass., also made a short address concerning religious and social conditions on the Zone as he had found them, and comparing them favorably with conditions obtaining in the United States.

There are 22 men enrolled in the ragtime tenpin bowling tournament now in progress. So far, the highest score has been made by Warner and Dougherty—740. High scores for the week are, as follows: Dougherty, 203, 201; Anderson, 200, 209; Leonard, 224.

Attention is invited to the coming entertainment and social to be held on Friday night, August 22. A program is being arranged, and refreshments will be served. All the grownups of both sexes are requested to be present.

EMPIRE.

The Culebra chess team defeated the Empire chess team on Monday evening, August 11, winning eleven, and losing five games. The teams were composed of the following players:

Empire.	Won.	Lost.	Culebra.	Won.	Lost.
H. A. A. Smith...	0	2	Dubois.....	2	0
M. A. Hall.....	1	1	E. M. Warner...	1	1

J. L. Caldwell....	0	2	McClure.....	2	0
E. M. Goolsby....	1	1	J. F. Warner....	1	1
G. W. Newbold....	1	1	Strong.....	1	1
Ludlum.....	0	2	C. Wilson.....	2	0
Lippert.....	1	1	J. B. Shropshire..	1	1
D. H. McCullough	1	1	Morgan.....	1	1

Total..... 5 11 11 5

Considerable interest has been manifested of late in chess, and matches will soon be played off with other teams from the various clubhouses.

Several of the new men have shown increased interest of late in checkers, and many inquiries have been made at the desk for sets. Four sets have recently been purchased, and it is hoped to have, in the near future, a team that can successfully compete with other teams along the line. All men interested in checkers are invited to meet with these men in the endeavor to form a winning team.

On Sunday evening, August 24, the Empire glee club will give a sacred concert to which the public is invited.

Many of the basketball players are coming out for practice. If sufficient interest is displayed a local league will soon be formed, from which the candidates for the Empire team will be picked for the Isthmian league.

GATUN.

The members of the Gatun association will entertain in honor of Governor Richard L. Metcalfe, and Mrs. Metcalfe, on Thursday evening, August 21, at 8 o'clock. Lieut.-Col. Wm. L. Sibert, chairman of the executive council, will preside. In addition to an address by Governor Metcalfe, there will be several musical numbers, and a brief address of welcome by Wm. Benton Childers, mayor of Gatun. The evening's program will be concluded by an informal reception, during which every one present will have an opportunity of meeting Governor and Mrs. Metcalfe. Refreshments will be served. On the committee of arrangements are W. C. Gayer, R. M. Gamble, Dr. A. G. Farmer, F. J. Sweek, C. E. Wood, Ben Jenkins, W. B. Childers, Major Jervey, H. B. Furlong.

At the bowling carnival, held on Wednesday evening, August 20, Mr. S. P. Dennis and Mrs. F. A. Crosscup won first prize (gold medal) and Mr. P. J. Claherty and Mrs. M. Conley won second prize (silver medal) in the "Open" contest, and Mr. and Mrs. C. C. Bailey won first prize (gold medal) and Mr. and Mrs. Sloane won second prize (pennant) in the "Married folks" contest.

The standing of the "Red Hot" indoor baseball league on Saturday evening, August 16 was, as follows:

Team.	Won.	Lost.	P. C.
Atlantic Division.....	2	0	1.000
First McClintic-Marshall, field.....	2	0	1.000
McClintic-Marshall, office.....	2	1	.666
First Division.....	1	1	.500
Transportation.....	1	2	.333
Commissary.....	0	2	.000
Second McClintic-Marshall, field.....	0	2	.000

The standing of the popular handicap pool tournament on Saturday evening, August 16 was, as follows:

Name.	Won.	Lost.	P. C.
Townsend.....	2	0	1.000
Bailey.....	1	0	1.000
O'Hara.....	1	0	1.000
Carkett.....	1	0	1.000
Kerruish.....	1	0	1.000
Johnson.....	1	1	.500
Wall.....	0	1	.000
Pettitt.....	0	1	.000
Dennis.....	0	1	.000
Gray.....	0	1	.000
Bradley.....	0	1	.000

The standing of the First Division duckpin tournament on August 16 was, as follows:

Team.	Won.	Lost.	P. C.
Dubbs.....	10	2	.833
Nut Splitters.....	5	4	.555
Shuttles.....	5	4	.555
Billikens.....	5	4	.555
Transmitters.....	5	7	.416
Chronics.....	3	6	.333
Boosters.....	3	9	.250

The Gatun ladies bowling team won two out of three games of duckpins from the Cristobal ladies duckpin team on Saturday afternoon, August 16.

The record for one day's playing in the poolroom was broken on Saturday, August 16, when 376 games were played. There were 223 games of bowling on this same day, which is, with one exception, the largest number ever recorded.

On Wednesday evening, August 20, at 6 o'clock, the first of a series of local aquatic tournaments will be conducted by the Y. M. C. A., in the forebay, north of Gatun Locks. There will be a men's relay race in which teams from the various companies and departments employed at Gatun will compete, together with a 75-yard swim open to boys 14 years of age, or under.

A meeting of the executive council of the Gatun association was held on Thursday evening, August 14. In the absence of Colonel Sibert, Mr. W. C. Gayer pre-

sided. Mr. R. M. Gamble was elected recording secretary in place of Mr. W. N. Windes, resigned. Financial and statistical reports as given by the clubhouse secretary showed the association to be in an exceptionally prosperous condition.

A record-breaking attendance is expected at the "Musical smoker" to be held on Saturday evening, August 23. The program for the evening includes some of the best talent on the Zone. Admission to the "Smoker" is confined to members only.

CRISTOBAL.

An open tournament was held Monday night, August 16, in honor of Miss Mae and Miss Ester Brown who are visiting their brother, Mr. W. L. Brown, and are being entertained by Mrs. Ed. Davis.

Thirty-two children crowded the quartermaster's brake on their way to the Hotel Washington swimming pool on Saturday, August 16. The children were so pleased with the trip that the outing promises to be a regular weekly affair.

The Corozal chess team defeated the Cristobal team Saturday night, by the score of 11½ to 2½. The individual scores were, as follows:

Corozal.	Cristobal.
Conner.....	2
Gartrell.....	1½
Morehead.....	1
Sherrard.....	2
Mills.....	1
Shohan.....	2
Kyte.....	2
Rappiner.....	0
Ogden.....	½
Taylor.....	1
Tuttle.....	0
Wilson.....	1
Salzburg.....	0
Wechsler.....	0

A meeting of the men interested in athletics was held Monday night, August 18, to arrange for the Labor Day field meet at Corozal.

On Tuesday night, August 19, the men interested in the discussion club met to perfect the organization.

PORTO BELLO.

Mr. W. B. Childers, superintendent for the McClintic-Marshall Company, will speak on Sunday night, August 17.

A pool tournament is to be started among the members in the near future.

The moving picture exhibitions continue on Friday nights and are attended by all.

Rainfall August 1 to August 16, 1913, Inclusive.

STATIONS.	Maximum in one day.	Date	Total for period.
	In.		In.
Pacific Section—			
Ancon.....	1.13	7	3.66
Balboa.....	1.31	7	3.40
*Miraflores.....	1.04	10	2.78
Pedro Miguel.....	1.10	10	3.50
Rio Grande.....	1.28	12	4.06
Central Section—			
Culebra.....	.86	6	3.88
*Camacho.....	1.15	6	4.77
Empire.....	1.86	6	5.53
Gamboa.....	2.30	12	8.68
*Juan Mina.....	1.23	5	4.91
Alhajuela.....	1.47	8	5.78
*El Vigia.....	1.37	8	5.09
*Frijoles.....	2.63	6	8.55
*Monte Lirio.....	2.00	6	3.57
Atlantic Section—			
Gatun.....	3.04	10	6.25
*Brazos Brook.....	4.35	10	8.62
Colon.....	3.29	10	7.29
Porto Bello.....	6.06	10	14.32

*Standard rain gage—readings at 5 p. m. daily; automatic rain gage at unstarred stations—values, midnight to midnight.

†To 5 p. m. August 15.

The Gorgona station was discontinued at the end of the day, August 16.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, August 16, 1913. All heights are in feet above mean sealevel

DAY AND DATE.	STATIONS.			
	Vigia.	Alhajuela	Gamboa.	Gatun Lake*
Sun., August 10.....	135.2	99.0	57.2	56.2
Mon., August 11.....	130.8	97.0	57.2	56.5
Tues., August 12.....	128.6	94.4	56.8	56.7
Wed., August 13.....	127.4	94.0	57.0	56.9
Thurs., August 14.....	126.4	92.8	57.0	57.0
Fri., August 15.....	132.9	97.4	57.6	57.2
Sat., August 16.....	130.2	96.1	57.6	57.5
Height of low water to nearest foot.....	125.0	91.0	44.0	

*Sluice gates in spillway of Gatun Dam were closed on June 27, 1913, with lake at elevation 48.25.

OFFICIAL CIRCULARS.

Instructions Concerning Installation, Repair, and Operation of Permanent Electrically Operated Canal Equipment Installed by the First Division.

CULEBRA, C. Z., July 19, 1913.

1. *Starting and testing of equipment*—The starting and testing of all machinery and electrical apparatus will be done by a testing engineer. No other person shall start any machine or make alive any circuit (110-volt lighting excepted) unless authorized by the superintendent of erection. It will be the duty of the testing engineer to familiarize himself with all apparatus by watching erection progress; to start, test, make all necessary adjustments of limit switches, interlocking devices, relays, etc., and put in service all electrically operated apparatus used or to be used for the permanent operation of the Canal.

2. *Supervisor's notice of completed work*—When the erection of any machine is completed, including the placing of motor, limit switch, and transmitter, the mechanical supervisor will send a supervisor's notice (Form No. C. E. 382) to the superintendent of erection, with a copy to the electrical supervisor and testing engineer. When any electrical construction work is completed, the electrical supervisor will send a supervisor's notice to the superintendent of erection, with a copy to the mechanical supervisor and the testing engineer.

3. *Supervisor's placards and protection of apparatus*—In addition to the sending of the supervisor's notice, the mechanical supervisor will place a supervisor's placard (sample "A") on the apparatus installed. The supervisor's placard absolutely prohibits any movement of or any further work on the apparatus indicated, except as hereinafter provided. The supervisor's placards are white in color and are marked "Original" and "Duplicate." The original is to state the apparatus involved, the date placed, and be signed by the mechanical supervisor. The duplicate placards are to be placed on various parts of the apparatus where the original is not discernible. In addition to the placing of the supervisor's placards, the mechanical supervisor will put all apparatus likely to be operated by gravity in safe condition. The electrical supervisor will open all disconnects, remove all fuses, and place "Hold cards" (sample "B") on same, when his work on a unit of equipment is complete and ready to be tested. The hold cards are white in color with a single red band.

4. *Testing engineer's notice*—After the superintendent of erection receives a supervisor's notice, he will, at his discretion, issue a testing engineer's notice (Form No. C. E. 380). The testing engineer's notice will be issued in quadruplicate and sent to the mechanical supervisor, electrical supervisor, and testing engineer. It will state the apparatus to be tested, and the date on which tests are to be made. The supervisors shall furnish assistance to the testing engineer, at his request, to remove blocking, energizing circuits necessary to test the apparatus involved. The electrical supervisor will remove "Hold cards" placed by himself previously, provided it is safe to make the circuit alive.

5. *Testing engineer's placards*—The testing engineer, before commencing tests called for in the testing engineer's notice, will remove all mechanical supervisor's placards and replace them with testing engineer's placards (sample "C"). The testing engineer's placards are white in color with two red bands, and are marked "Original" and "Duplicate." They give warning that the apparatus may be energized at any moment for test. The original is signed by the testing engineer and indicates the apparatus involved and the date tests are started. The duplicate placards are to be placed on the various parts of the apparatus from which the original is not discernible. The original mechanical supervisor's placards will be forwarded to the mechanical supervisor who will note and place same on file. When apparatus has testing engineer's placards on it, no person is to work on, make alterations, or energize same, except the testing engineer. On completion of tests and all adjustments on the apparatus involved, the testing engineer will report in detail to the superintendent of erection, using Form No. C. E. 381.

6. *Notice of completed tests*—On receipt of the testing engineer's report (Form No. C. E. 381), the superintendent of erection will send a form letter (Form No. C. E. 383) to the supervisors and to the testing engineer, notifying them if the apparatus involved is considered ready for service; or, if not, what changes or additional tests are to be made. If form letter (C. E. 383) advises that the apparatus is considered ready for service, the testing engineer will remove his placards and substitute "Warning" placards (sample "D").

7. *Alterations by supervisors in tested equipment*—In case alterations are requested by the superintendent of erection, the testing engineer will remove his placards, noting on the original the date removed and alterations to be made, and then file same. He will also disconnect all testing apparatus and notify the supervisor concerned. Before the supervisor makes any alterations,

he will see that all placards are removed and that the men working on the apparatus are safe from accident due to energizing of electrical apparatus. The supervisor, on the completion of his work, will, as before, place supervisor's placards and send a supervisor's notice to the superintendent of erection, and routine will then be the same as in the installation of new apparatus.

8. *Warning placards*—A warning placard (sample "D") is to be placed by the testing engineer on all apparatus that is considered ready for service by the superintendent of erection. The testing engineer will place the warning placard and at the same time remove his placard and file the original, noting the date tests were completed and date apparatus was placed in service. The warning placards are white in color with a green band and contain a warning that the apparatus may be operated or energized at any moment. They will be placed in original and duplicate. The original will identify the apparatus, give the date tests were completed and be signed by the testing engineer. The duplicate placards are to be placed on parts of the apparatus from which the original is not discernible.

9. *General repairs on equipment in operation*—In case of breakdown in any apparatus or trouble of any sort interfering or liable to interfere with the operation of any machinery, the supervisor in charge will notify the superintendent of erection and the testing engineer. Before any tests are made or work is done on the apparatus, the testing engineer will remove all warning placards, note date on same, sign, and file. He will also see that "Hold cards" are placed on all switches and remove or open all disconnects liable to energize the apparatus. In cases where the trouble is not apparent, such as breakdowns in control wire or cables, the testing engineer will proceed at once to locate such faults by proper test methods. When cause of any trouble is ascertained, the testing engineer will report to the superintendent of erection who will, in turn, issue instructions to the supervisor concerned. The procedure will then be the same as in the installation of new apparatus. All verbal conversations are to be confirmed in writing by a supervisor's notice, a testing engineer's notice, and a testing engineer's report. Before apparatus is finally put back in service, the testing engineer will remove all "Hold cards" placed by himself and place a new set of warning placards.

10. *Removal or defacing of placards*—In no case shall any unauthorized person remove or deface any placard or energize any apparatus with placards or "Hold cards" on same under penalty of immediate dismissal from the service. In no case shall a circuit or apparatus be energized by any person when same has a "Hold card" placed on it until the person who placed the "Hold card," and whose signature is on same, shall personally remove it and signify by so doing that the circuit or apparatus may be safely energized.

11. *General rules for the safety of employees*—(a) No person whether an employee, or otherwise, shall lounge about or place himself in such a position as to interfere with the operation of any machine, or touch (or expose person by dangerous proximity) either with or without rubber gloves, any switches, current, or potential transformer, or any electrical apparatus or conductor on which a potential higher than 240 volts exists, until he has positively ascertained that such apparatus or conductor is disconnected from all sources of such potential. Two hundred and forty volts is considered a dangerous potential and should be treated accordingly.

(b) Before touching any apparatus or conductor on which a potential higher than 240 volts may exist, the foreman in charge will make his own tests to verify that such apparatus or line is dead. He will also see that all switches and disconnects are open and place "Hold cards" on same. The "Hold cards" shall be signed by the foreman and give the date of and reason for placing. The foreman will also make a careful inspection to see that there is no condition existing that may endanger himself or his men in their work. In all cases of doubt the foreman shall consult the general foreman and the general foreman shall consult the electrical supervisor, and in case of still further doubt, the matter shall be referred to the testing engineer.

(c) Having taken these precautions and thus ascertained that the apparatus or line is dead, the foreman will, before doing any work, first consult his general foreman. Before any work is to be started the line or apparatus is to be well grounded; a substantial contact is first to be made between an approved ground connector and the ground, and then between the connector and each phase of the apparatus or line.

(d) The foreman in charge is to notify his general foreman on completion of the work, who will instruct whether, or not, the "Hold cards" and ground connectors are to be removed and place supervisor's placards.

(e) All defects, unsafe work, or dangerous conditions are to be reported immediately to the superintendent of erection through regular official channels.

(f) In case of injury to any persons, first aid should be rendered and physician summoned immediately.

(g) All accidents to employees, or any one else when

the First Division is involved, shall be immediately reported on proper form (X-155) provided for that purpose.

(h) When a broken or burned wire or broken or defective piece of apparatus is involved in any accident, it should be carefully preserved and marked for identification.

(i) All persons in the employ of the Commission on work affected by the foregoing regulations are expected to familiarize themselves with them. Ignorance of any rule or requirement will not be accepted as an excuse for not complying with same. A strict observance is necessary for the safety of life and the protection of apparatus.

GEORGE W. GOETHALS,
Chairman and Chief Engineer.

Mechanical Division Headquarters.

CULEBRA, C. Z., August 12, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

The office of the assistant superintendent of the Mechanical Division, and the drafting room under the Mechanical Division, will be moved from Gorgona to Empire on August 18.

All mail on and after August 16 for the assistant superintendent of the Mechanical Division should be addressed to him at Empire.

GEORGE W. GOETHALS,
Chairman and Chief Engineer.

Employees Requested Not to Change their Sailing Date.

CULEBRA, C. Z., August 15, 1913.

HEADS OF DEPARTMENTS AND DIVISIONS:

There is an increasing tendency on the part of employees to request transportation for themselves, or members of their families, on a certain boat, and, although accommodations are available on that particular boat, subsequently change their request for another sailing date. This causes a great deal of confusion and extra work in this office, as well as in the steamship ticket office at Colon.

Employees are urged to arrange their plans sufficiently in advance to be able to fix a definite sailing date, and when transportation is issued by this office no change in sailing date will be allowed unless a satisfactory explanation for such change is submitted.

GEORGE W. GOETHALS,
Chairman.

Rates for Children on United Fruit Company's Vessels.

CULEBRA, C. Z., August 15, 1913.

CIRCULAR No. 175-O.

Referring to Circular 175-N, with reference to rates for children on the United Fruit Company's line.

Advice has been received from the local General Agent of the United Fruit Company that, effective at once, half-rate tickets for children of Commission employees will be sold on the basis of one-half of the regular Commission rate.

GEORGE W. GOETHALS,
Chairman.

Permanent Silver Camp to be Called La Boca.

CULEBRA, C. Z., August 18, 1913.

CIRCULAR No. 245-A.

The permanent silver settlement which has been laid out on Balboa dump, southeast of Sosa Hill, will hereafter be known as La Boca.

GEORGE W. GOETHALS,
Chairman and Chief Engineer.

Abandonment of Gorgona and Matachin Passenger Train Service.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., August 16, 1913.

CIRCULAR No. 162.

To All Concerned—Effective Monday, August 25, 1913, Gorgona and Matachin stations will be vacated and abandoned. On and after that date we will continue to operate trains across the dike track as at present (except that trains will not go to Gorgona and Matachin), until new time card is put into effect on Tuesday, September 2, 1913, after which all main line trains will be operated between Colon and Panama via the Gold Hill line, and train service will also be inaugurated between Bas Obispo and Panama, detailed schedule of which will be published later.

JOHN D. PATTERSON,
General Superintendent.

General Inspector, Central Division.

EMPIRE, C. Z., August 11, 1913.

CENTRAL DIVISION CIRCULAR No. 371:

Effective this date, the duties heretofore performed by Mr. A. E. Bronk, General Inspector, will be performed by Mr. W. I. Beam in addition to his other duties as chief clerk.

A. S. ZINN,
Acting Division Engineer.

COMMISSARY DEPARTMENT.

The commissary stores are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.
Retail prices of cold storage provisions for the week beginning August 20, 1913:

FRESH MEAT.	Price
Mutton—Stewing, per pound.....	6
Shoulder, neck trimmed off (4 pounds and over), per pound.....	9
Entire forequarter (not trimmed, 10 pounds and over), per pound.....	8
Legs (8 to 10 pounds), per pound.....	17
Cutlets, per pound.....	18
Short cut chops, per pound.....	20
Lamb—Stewing, per pound.....	6
Entire forequarter, neck trimmed off, per pound.....	9
Legs (5 to 8 pounds), per pound.....	20
Chops, per pound.....	24
Cutlets, per pound.....	24
Veal—Stewing, per pound.....	10
Shoulder, for roasting (not under 4 pounds), per pound.....	12½
Chops, shoulder, per pound.....	17
Chops, per pound.....	26
Loin for roasting, per pound.....	26
Cutlets, per pound.....	30
Beef—Suet, per pound.....	2
Soup, per pound.....	5
Stew, per pound.....	9
Plate, No. 1, per pound.....	14
Corned, No. 2, per pound.....	12
Chuck roast, 3 lbs. and over, per pound.....	12
Rib roast, second cut (not under 3½ pounds), per pound.....	16
Rib roast, first cut (not under 3 pounds), per pound.....	18
Pot roast, per pound.....	19
Rump roast, per pound.....	19
Porterhouse roast, per pound.....	20
Steak, Chuck, per pound.....	12½
Round, per pound.....	13
Rib, per pound.....	18
Sirloin, per pound.....	19
Rump, per pound.....	19
Porterhouse (not less than 1½ pounds), per pound.....	20
Tenderloin (Western), per pound.....	30
Pork—Loin chops or roast, per pound.....	17
Hams, fresh, per pound.....	\$20
Shoulders, fresh, per pound.....	\$17
Spare ribs, per pound.....	15
Backbones, per pound.....	15
Pigs feet, each.....	7
Pigs head, ½ head.....	60
Sausage meat, fresh, per pound.....	20
MISCELLANEOUS.	
Livers—Beef, per pound.....	11
Calf, each.....	60
Half, each.....	30
Steak, Hamburger, package.....	13
Sausage—Bologna, per pound.....	13
Frankfurter, per pound.....	13
Lieberwurst, per pound.....	13
Devonshire Farm, per pound.....	20
Sweetbread, beef, per pound.....	40
Eggs, fresh, dozen.....	30
one-half dozen only.....	15
Bluefish, per pound.....	15
Halibut, fresh, per pound.....	15
Salmon, per pound.....	15
Roe shad, each.....	75
Shad roes, pair.....	40
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each.....	1.40
Fancy roasting, milk fed, med., each.....	1.10
Fancy roasting, corn fed, about 5½ pounds, each.....	1.25
Fancy roasting, corn fed, about 4½ pounds, each.....	1.00
Fowls, each.....	1.00
Ducks, (Western, about 4½ pounds), each.....	1.25
Broilers, milk fed, each.....	70
Broilers, corn fed, each.....	60
Turkeys, per pound.....	26
Squabs, each.....	50
Rabbits, skinned, each.....	30
Ducks, blackhead, pair.....	60
Partridges, pair.....	1.30
Grouse, per pair.....	1.30
Pheasants.....	1.30
CURED AND PICKLED MEATS	
Ham—Genuine Westphalia, per pound.....	40
Ham—Sugar cured, per pound.....	20
Sliced, per pound.....	22
Boiled, per pound.....	21
Hocks, per pound.....	28
Beef, salt, family, per pound.....	12
Bacon—Breakfast, whole piece, per pound.....	25
Sliced, per pound.....	26
Ham, lunch, per pound.....	32
Pork, salt, family, per pound.....	14
Ox tongues, each.....	1.00
Pigs' feet, per pound.....	9
Tongues, per pound.....	18
DAIRY PRODUCTS.	
Butter—Creamery, special, per pound.....	34
Sheffield Farms, extra fancy, per lb.....	46

Cheese—Philadelphia cream, cake.....	Price 10
Roquefort, per pound.....	35
Young America, per pound.....	22
Swiss, per pound.....	28
Edam, each.....	1.00
Edam, tin.....	25
Parmesan, per pound.....	35
Gouda, per pound.....	30
Snappy, per cake.....	10
Milk (certified), per bottle.....	**20
Fer-mil-lac, bottle.....	**20
Ice cream, quart.....	125
½-gallon.....	150

VEGETABLES AND FRUITS.

Beets, per pound.....	3
Celery, per head.....	6
Cabbage, per pound.....	4
Cucumbers, per pound.....	4
Carrots, per pound.....	4
Egg plant, per pound.....	*4
Lettuce, per pound.....	12
Onions, per pound.....	3
Potatoes, white, per pound.....	2
sweet, per pound.....	2
Parsnips, per pound.....	3½
Parsley, bunch.....	5
Peppers, green, per pound.....	8
Squash, per pound.....	4
Turnips, per pound.....	4
Tomatoes, per pound.....	3
Yams, per pound.....	3
Apricots, per pound.....	15
Apples, per pound.....	10
Cantaloupes, each.....	*5
Grape fruit, tropical, each.....	4
American, each.....	15
Lemons, dozen.....	24
Limes, per hundred.....	80
Peaches, per pound.....	*12
Plums.....	10
Oranges, Jamaican, per dozen.....	18
Watermelons, each.....	145

*Indicates reduction from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advance on last list.
††Fowls weigh each, about as follows: 3, 3½, 4, 4½, and 5 pounds. Prices are based accordingly; when size ordered is not in stock, next lightest weight is supplied and refund note sent for difference.
‡Sold only from commissaries; no orders taken for delivery.
§Not less than half of a fresh ham or shoulder will be sold.

Supplies for the Canal.

The following steamers with supplies for the Isthmian Canal Commission and Panama Railroad Company, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending August 16:

Allianca, August 13, from New York, with 144 barrels sand, 85 boxes incandescent lamps, for Mechanical Division; five barrels oil soap, for stock; 170 crates tiles, for First Division; medical supplies, for Sanitary Division; 30 cases electrical material, six reels wire, for First Division; 10 cases padlocks, 57 kegs horse and mule shoes, 260 drums carbide of calcium, 36 drums oil, 400 tin lines shovels, for stock.

Cristobal, August 15, from New York, with 141,938 bags cement, for stock; 175,300 pounds coke, for Mechanical Division; 132 pieces structural steel, for Fifth Division; 21 cases machinery, for First Division.

Danube, August 10, from New York with four crates pump parts, for Atlantic Division; one case drills, two cases vices, for stock; two cases vices, for Mechanical Division.

Carrillo, August 10, from New York, with nine cases plumbing material, for stock; four reels copper wire, 24 crates structural steel, for Mechanical Division.

Cartago, August 11, from New Orleans, with 513 barrels paving brick, for Panama Railroad Company; 53 pieces castings, for Mechanical Division; 2,036 pieces pipe, 243 bales straw, 1,327 pieces lumber, for stock.

Santa Marta, August 13, from New York, with seven boxes packing, for stock; two boxes gate valve machinery, for First Division.

Abangarez, August 15, from New Orleans, with 3,171 pieces pipe, 2,345 pieces plumbing fittings, two cases flags, for stock.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending August 30, 1913:

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
Aug. 24.....	1.52	7.53	2.27	8.17	
Aug. 25.....	2.35	8.38	3.18	9.10	
Aug. 26.....	3.31	9.35	4.25	10.20	
Aug. 27.....	4.48	10.48	5.35	11.42	
Aug. 28.....		6.08	12.10	6.45	
Aug. 29.....	12.59	7.16	1.21	7.47	
Aug. 30.....	2.00	8.15	2.21	8.40	

75th. meridian time

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Advance.....	P. R. R.	Tuesday.....	Aug. 19
Panama.....	P. R. R.	Monday.....	Aug. 25
Allianca.....	P. R. R.	Saturday.....	Aug. 30
Colon.....	P. R. R.	Saturday.....	Sept. 6
Advance.....	P. R. R.	Friday.....	Sept. 12
Panama.....	P. R. R.	Thursday.....	Sept. 18
Allianca.....	P. R. R.	Wednesday.....	Sept. 24
Colon.....	P. R. R.	Tuesday.....	Sept. 30
Advance.....	P. R. R.	Monday.....	Oct. 6
Panama.....	P. R. R.	Saturday.....	Oct. 11
Allianca.....	P. R. R.	Saturday.....	Oct. 18
Colon.....	P. R. R.	Friday.....	Oct. 24
Advance.....	P. R. R.	Thursday.....	Oct. 30

CRISTOBAL TO NEW YORK.

Colon.....	P. R. R.	Sunday.....	Aug. 24
Advance.....	P. R. R.	Sunday.....	Aug. 31
Panama.....	P. R. R.	Saturday.....	Sept. 6
Allianca.....	P. R. R.	Thursday.....	Sept. 11
Colon.....	P. R. R.	Thursday.....	Sept. 18
Advance.....	P. R. R.	Wednesday.....	Sept. 24
Panama.....	P. R. R.	Tuesday.....	Sept. 30
Allianca.....	P. R. R.	Monday.....	Oct. 6
Colon.....	P. R. R.	Sunday.....	Oct. 12
Advance.....	P. R. R.	Saturday.....	Oct. 18
Panama.....	P. R. R.	Thursday.....	Oct. 23
Allianca.....	P. R. R.	Thursday.....	Oct. 30

NEW YORK TO COLON.

Metapan.....	U. F. C.	Wednesday.....	Aug. 13
Prinz August Wilhelm.....	H.-A.	Saturday.....	Aug. 16
Tivives.....	U. F. C.	Saturday.....	Aug. 16
Tagus.....	R. M.	Saturday.....	Aug. 16
Zacapa.....	U. F. C.	Wednesday.....	Aug. 20
Emil L. Boas.....	H.-A.	Saturday.....	Aug. 23
Sixola.....	U. F. C.	Saturday.....	Aug. 23
Almirante.....	U. F. C.	Wednesday.....	Aug. 27
Oruba.....	R. M.	Saturday.....	Aug. 30
Carrillo.....	U. F. C.	Saturday.....	Aug. 30
Prinz Joachim.....	H.-A.	Saturday.....	Aug. 30
Santa Marta.....	U. F. C.	Wednesday.....	Sept. 3
Carl Schurz.....	H.-A.	Saturday.....	Sept. 6
Pastores.....	U. F. C.	Saturday.....	Sept. 6
Metapan.....	U. F. C.	Wednesday.....	Sept. 10

COLON TO NEW YORK.

Santa Marta.....	U. F. C.	Thursday.....	Aug. 21
Carl Schurz.....	H.-A.	Tuesday.....	Aug. 26
Pastores.....	U. F. C.	Tuesday.....	Aug. 26
Metapan.....	U. F. C.	Thursday.....	Aug. 28
Prinz August Wilhelm.....	H.-A.	Tuesday.....	Sept. 2
Tivives.....	U. F. C.	Tuesday.....	Sept. 2
Trent.....	R. M.	Tuesday.....	Sept. 2
Zacapa.....	U. F. C.	Thursday.....	Sept. 4
Emil L. Boas.....	H.-A.	Tuesday.....	Sept. 9
Sixola.....	U. F. C.	Tuesday.....	Sept. 9
Almirante.....	U. F. C.	Thursday.....	Sept. 11
Prinz Joachim.....	H.-A.	Tuesday.....	Sept. 16
Carrillo.....	U. F. C.	Tuesday.....	Sept. 16
Santa Marta.....	U. F. C.	Thursday.....	Sept. 18

NEW ORLEANS TO COLON.

Atenas.....	U. F. C.	Saturday.....	Aug. 16
Parismina.....	U. F. C.	Wednesday.....	Aug. 20
Turrialba.....	U. F. C.	Saturday.....	Aug. 23
Cartago.....	U. F. C.	Wednesday.....	Aug. 27
Abangarez.....	U. F. C.	Saturday.....	Aug. 30

COLON TO NEW ORLEANS.

Abangarez.....	U. F. C.	Thursday.....	Aug. 21
Heredia.....	U. F. C.	Saturday.....	Aug. 23
Atenas.....	U. F. C.	Thursday.....	Aug. 28
Parismina.....	U. F. C.	Saturday.....	Aug. 30

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays at 1 p. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays and Saturdays at 3 p. m.; ships for New York via Kingston, on Tuesdays at 1.30 p. m. and Thursdays at 1.30 p. m.; for Bocas del Toro, on Mondays at 5 p. m.; for Limon, via Bocas del Toro, on Tuesdays at 5 p. m., and for Limon direct, Tuesdays at 3 p. m.

Hamburg-American steamers sail for New York, via Kingston and Santiago de Cuba, on Tuesdays, the *Prinz Joachim* and *Prinz August Wilhelm* at 10 a. m., and the *Emil L. Boas* and *Carl Schurz* at 2 p. m.

Launch Service to Taboga.

The steam launch *Sanidad* leaves the dredge landing at Balboa at 9 o'clock, Tuesday, Thursday, and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connection for the 5.25 train at Panama.

STATEMENT OF
CONSTRUCTION EXPENDITURES
TO JUNE 30, 1913

(Part II of The Canal Record, August 20, 1913.)

STATEMENT OF CONSTRUCTION EXPENDITURES TO JUNE 30, 1913.

Table No. 1.

Includes administrative and general expenses, but does not include "General Items" or expenditures for sanitation, hospitals, or civil administration.

ITEMS.	FOURTH QUARTER, FISCAL YEAR 1913.			TO MARCH 31, 1913			TOTAL TO JUNE 30, 1913.		
	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
<i>Atlantic Division—</i>	<i>Cubic Yards.</i>								
1 Dry excavation, prism.....		\$11,722.63		2,181.998	\$1,456,977.48	\$0.6677	2,181.998	\$1,468,700.11	\$0.6731
2 Hydraulic excavation, prism.....				29,605	11,671.32	.3942	29,605	11,671.32	.3942
3 Dredging excavation, prism.....	1,936.360	438,332.97	\$0.2264	33,390.003	\$7,983,724.45	.2391	35,326.363	\$8,422,057.42	.2384
<i>Gatun Spillway—</i>									
4 Dry excavation.....				1,544.202	\$1,096,180.59	\$0.7099	1,544.202	\$1,096,180.59	\$0.7099
5 Preparing foundations.....				44,266	97,018.53	2.1917	44,266	97,018.53	2.1917
6 Masonry.....	2,640	\$29,926.41	11.3358	221,492	1,756,660.61	7.9310	224,132	1,786,587.02	7.9711
7 Ironwork.....		7,906.02			147,129.42			155,035.44	
8 Back filling.....		7,832.02		24,716	12,456.18	.5040	24,716	12,456.18	.5040
9 Operating Machinery.....		13,652.18			84,932.27			92,764.29	
10 Gates and Caisson.....					62,818.65			76,470.83	
Total.....		\$59,316.63			\$3,257,196.25			\$3,316,512.88	
<i>Gatun Dam—</i>									
11 Dredging excavation.....				38,425	\$20,041.19	\$0.5216	38,425	\$20,041.19	\$0.5216
12 Dry filling.....	299,768	\$93,029.68	\$0.3103	11,574,765	5,091,471.48	.4399	11,874,533	5,184,501.16	.4366
13 Hydraulic filling.....		11,158.28		10,728,965	3,214,827.75	.2996	10,728,965	3,203,669.47	.2986
14 Paving.....		38,442.25			105,199.10			143,641.35	
Total.....		\$120,313.65			\$8,431,549.52			\$8,551,853.17	
<i>Gatun Locks—</i>									
15 Dry excavation.....	28,506	\$22,853.67	\$0.8017	4,626,549	\$3,125,977.23	\$0.6757	4,660,455	\$3,148,830.90	\$0.6757
16 Dredging excavation.....				1,756,977	561,923.85	.3198	1,756,977	561,923.85	.3198
17 Preparing foundations, excavation.....	2,333	3,017.43	1.2934	226,043	450,981.59	1.9951	228,376	453,999.02	1.9879
18 Preparing foundations, dredging.....	1,211	6,193.00	5.1140	18,603	33,527.50	1.8023	19,814	39,720.50	2.0047
19 Preparing foundations, filling.....	1,544	1,287.74	.8340	40,117	15,226.73	.3796	41,661	16,514.47	.3964
20 Preparing foundations, concrete piling, (lineal feet).....		3,833.00		83,670	134,572.36	1.6084	83,670	138,405.36	1.6542
21 Preparing foundations, wooden piling (lineal feet).....		873.34		251,999	163,739.45	.6498	251,999	164,612.79	.6532
22 Filling around south approach wall, dry.....				7,072	3,777.61	.5342	7,072	3,777.61	.5342
23 Filling around south approach wall, hydraulic.....				594,495	94,077.49	.1582	594,495	94,077.49	.1582
24 Masonry.....	38,437	303,463.00	7.8951	2,002,846	14,903,204.31	7.4410	2,041,283	15,206,667.31	7.4496
25 Gates and Fender Chains.....		261,408.36			2,033,384.61			2,294,792.97	
26 Ironwork.....		34,653.10			1,338,395.03			1,373,048.13	
27 Backfilling.....	90,835	53,929.00	.5937	1,936,995	968,132.26	.4998	2,027,830	1,022,061.26	.5040
28 Filling center wall.....				113,163	91,753.09	.8108	113,163	91,753.09	.8108
29 Operating machinery.....		409,061.53			2,299,645.82			2,708,707.35	
30 Emergency Dams.....		215,775.60			606,903.14			822,678.74	
31 Control House (other than Masonry).....		1,752.28			1,821.29			3,573.57	
Total.....		\$1,318,101.05			\$26,827,043.36			\$28,145,144.41	
<i>Gatun power plant (permanent)</i>									
32 Dry excavation.....				87,067	\$35,310.45	\$0.4056	87,067	\$35,310.45	\$0.4056
33 Preparing foundations.....	670	2,232.18	\$3.3316	11,014	20,895.01	1.8971	11,684	23,127.19	1.9794
34 Masonry.....	3,279	29,712.02	9.0613	1,789	18,310.40	10.2350	5,068	48,022.42	9.4756
35 Machinery.....		7,628.20			201,776.62			209,404.82	
36 Miscellaneous Construction.....		45,551.05			2,686.92			48,237.97	
Total.....		\$85,123.45			\$278,979.40			\$364,102.85	
<i>Gatun-Mindi Levee—</i>									
37 Dry fill.....				177,158	\$68,985.15	\$0.3894	177,158	\$68,985.15	\$0.3894
38 Hydraulic fill.....				20,398	3,483.32	.1708	20,398	3,483.32	.1708
Total.....					\$72,468.47			\$72,468.47	
39 Clearing drift in Gatun Lake.....		\$1,721.32			\$3,961.95			\$5,683.27	
40 Colon Breakwater.....	58,968	287,409.08	4.8740	1,009,857	2,348,769.77	2.3258	1,068,825	2,636,178.85	2.4664
41 Terminal facilities—Cristobal.....		1,893.10			12,595.04			14,488.14	
Total construction cost, Atlantic Division.....		\$2,323,933.88			\$50,684,927.01			\$53,008,860.89	
42 Plant and equipment to be absorbed in construction costs after Mch. 31, 1913.....								\$496,806.85	
Total expenditures, Atlantic Division.....								\$53,505,667.74	
<i>Central Division—</i>									
43 Dry excavation, prism.....	2,907,009	\$1,853,476.05	\$0.6376	104,232,172	\$81,949,018.05	\$0.7862	107,139,181	\$83,802,494.10	\$0.7822
44 Clearing Canal line, without excavation, (acres).....	250	7,924.47	31.6979	2,280	141,426.75	62.0293	2,530	149,351.22	59.0321
45 Dredging excavation.....		183.47			9,798.40			9,981.87	
46 Masonry.....				1,271	8,353.66	6.5725	1,271	8,353.66	6.5725
47 Masonry, cement gun facing (sq. yds.).....				4,250	4,079.11	.9508	4,250	4,079.11	.9508
48 Hydraulic excavation.....	57,274	10,511.46	.1835				57,274	10,511.46	.1835
Total construction cost Central Division.....		\$1,872,095.45			\$82,112,675.97			\$83,984,771.42	
49 Plant and equipment to be absorbed in construction costs after June 30, 1913.....								\$42,251.97	
Total expenditures, Central Division.....								\$83,942,519.45	
<i>Pacific Division—</i>									
50 Dry excavation, prism.....	865,988	\$563,831.75	\$0.6511	3,647,281	\$2,761,561.26	\$0.7572	4,513,269	\$3,325,393.01	\$0.7368
51 Dredging excavation, prism.....	1,330,725	410,571.16	.3085	35,462,490	\$8,973,263.67	.2530	36,793,215	9,383,834.83	.2550
52 Hydraulic excavation, prism.....				1,549,904	1,120,907.35	.7232	1,549,904	1,120,907.35	.7232
<i>Pedro Miguel Dam—</i>									
53 Masonry.....				1,567	8,716.96	5.5628	1,567	8,716.96	5.5628
54 Dry excavation.....				10,475	19,850.03	1.8950	10,475	19,850.03	1.8950
55 Dry filling.....	3,680	\$1,101.62	.2994	692,878	331,974.08	.4791	696,558	333,075.70	.4782
Total.....		\$1,101.62			\$360,541.07			\$361,642.69	
<i>Pedro Miguel Locks—</i>									
56 Dry excavation.....				1,133,280	\$1,031,422.86	\$0.9101	1,133,280	\$1,031,422.86	\$0.9101
57 Preparing foundations.....	747	6,988.51	\$9.3554	175,176	472,418.83	2.6968	175,923	479,407.34	2.7251
58 Masonry.....	2,511	60,262.20	23.9993	903,782	5,268,698.29	5.8296	906,293	5,328,960.49	5.8800
59 Gates.....		195,062.21			1,187,177.46			1,382,239.67	
60 Iron work.....		13,252.17			667,782.71			681,034.88	
61 Backfilling.....	45,508	20,112.17	.4419	761,030	317,603.37	.4173	806,538	337,715.54	.4187
62 Filling center wall.....	79,543	31,229.18	.4427	144,606	72,556.47	.5018	215,149	103,785.65	.4824
63 Operating machinery.....		195,510.85			1,223,273.98			1,418,784.83	
64 Emergency dams.....		418,649.62			94,212.87			512,862.49	
65 Control house (other than masonry).....		5,661.90						5,661.90	
Total.....		\$946,728.81			\$10,335,146.84			\$11,281,875.65	

Bold-face type indicates credit.

(Table 1—Continued.)

ITEMS	THIRD QUARTER, FISCAL YEAR 1913.			TO DECEMBER 31, 1912.			TOTAL TO JUNE 30, 1913.		
	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
<i>Miraflores West Dam—</i>									
66 Dry filling.....	40,585	25,233.63	\$0.6217	1,619,414	\$781,153.51	\$0.4824	1,659,999	\$806,387.14	\$0.4858
67 Hydraulic filling.....		13,354.55			39,606.39			52,960.94	
68 Masonry, core wall.....		144.60		4,403	21,264.35	5.8295	4,403	21,408.95	4.8624
69 Dry excavation.....	8,060	2,429.03	.3014	16,399	23,252.74	1.4179	24,459	25,681.77	1.0500
Total.....		\$41,161.81			\$865,276.99			\$906,438.80	
<i>Miraflores East Dam and Spillway—</i>									
70 Excavation.....	18,583	\$ 57,565.96	\$3.0978	106,192	\$186,089.47	\$1.7524	124,775	\$243,655.43	\$1.9528
71 Masonry.....	46,980	304,892.57	6.4898	17,162	96,019.68	5.5949	64,142	400,912.25	6.2504
72 Iron work.....		9,780.79			34,103.58			24,322.79	
73 Operating machinery.....		8,156.54			57,489.00			65,645.54	
74 Gates and caisson.....		11,482.52			52,108.21			40,625.69	
Total.....		\$349,351.76			\$425,809.94			\$775,161.70	
<i>Miraflores Locks—</i>									
75 Dry excavation, diversions.....				5,885	\$2,028.98	\$0.3448	5,885	\$2,028.98	\$0.3448
76 Dry excavation in locks.....				2,222,582	2,063,288.45	.9283	2,222,582	2,063,288.45	.9283
77 Dredging excavation.....				309,647	142,379.66	.4598	309,647	142,379.66	.4598
78 Hydraulic excavation.....				332,703	195,299.02	.5870	332,703	195,299.02	.5870
79 Preparing foundation excavation.....	390	\$4,104.98	10.5256	415,591	789,011.54	1.8985	415,981	793,116.52	1.9066
80 Preparing foundations, wooden piles (lineal feet).....		991.74		44,705	61,490.42	1.3755	44,705	60,498.68	1.3533
81 Masonry.....	16,036	155,477.30	9.6955	1,460,859	7,730,637.81	5.2918	1,476,895	7,886,115.11	5.3397
82 Gates.....		284,579.49			966,911.74			1,251,491.23	
83 Iron work.....		44,601.20			890,630.87			935,232.07	
84 Back filling.....	218,345	103,009.89	.4718	1,787,709	651,776.29	.3646	2,006,054	754,786.18	.3763
85 Filling center wall.....	127,735	69,610.07	.5450	29,478	34,006.51	1.1536	157,213	103,616.58	.6591
86 Operating machinery.....		561,325.30			1,054,471.13			1,615,796.43	
87 Emergency dams.....		18,831.68			20,525.76			39,357.44	
Total.....		\$1,240,548.17			\$14,602,458.18			\$15,843,006.35	
<i>LaBoca Locks and Dams (abandoned)</i>									
88 Dry excavation.....				78,233	\$158,343.29	\$2.0240	78,233	\$158,343.29	\$2.0240
89 Construction, dams.....					315,350.07			315,350.07	
90 Construction, locks.....					159,306.40			159,306.40	
Total.....					\$632,999.76			\$632,999.76	
91 Naos Island breakwater.....	151,628	\$38,568.95	\$0.2544	1,283,530	\$366,531.93	\$0.2856	1,435,158	405,100.88	\$0.2823
92 Terminal facilities, Balboa.....		703,024.12			1,161,145.00			1,864,169.12	
Total construction cost, Pacific Division.....		\$4,294,888.15			\$41,605,641.99			\$45,900,530.14	
93 Plant and equipment to be absorbed in construction costs after June 30, 1913.....								1,453,394.79	
Total expenditures, Pacific Division.....								\$47,353,924.93	
94 Lighting and buoying canal.....		\$158,288.25			\$239,079.68			\$397,367.93	
95 Permanent buildings.....		46,196.67			22,965.81			69,162.48	
96 Trans-isthmian oil line.....		32,054.69						32,054.69	
97 Electric transmission line.....		9,769.57			5,628.96			15,398.53	
Total expenditures, constr. and eng'nr'g.....								\$185,316,095.75	

Items 31 and 65—Concrete used in erection of the control houses, is included under items 24 and 58, "Masonry, respectively."
 Item 45—Central Division Dredging Excavation, Prism, Preliminary Surveys.
 Item 47—Represents Operation of cement gun used in facing walls of the cut.
 Item 48—Hydraulic Excavation. This work was done on the upper banks of the canal north of Gold Hill by the Fifth Division.
 Item 67—Hydraulic Filling Miraflores West Dam. Expenditures represent cost of pipe lines, flumes, etc. 661,048 cubic yards have been deposited in the dam from dredges and hydraulic excavation in lock chambers and in prism below the locks. The expense thereof has been charged to "Excavation."
 Items 88, 89, and 90—LaBoca Locks and Dams. These expenses were incurred prior to the adoption of Miraflores as the site for the lower locks and dams at the Pacific entrance of the Canal.
 Item 91—Naos Island Breakwater. This breakwater is being constructed entirely by the Central Division with material from the Cut. Only the excess cost of dumping at this point, as compared with the cost at the regular dumps, is charged to this item.
 Items 42, 49, and 93—The expenditures for Plant and Equipment are absorbed in the construction costs on the basis of the estimated cost of plant and the estimated quantities of work to be done. The amount under these items represent the balances which are to be absorbed into construction costs after June 30, 1913.
 General—When excavated material is used for filling, such as dams, backfilling, etc., the cost of dumping only is charged to the item benefited, other expenses being charged to "Excavation."
 Due to changes in organization, this statement no longer represents the work done by the various construction divisions, the divisions shown thereon being geographical

DAM CONSTRUCTION.

Table No. 2.

Detailed cost per cubic yard for quarter ending June 30, 1913.

	GATUN DAM.				PEDRO MIGUEL DAM.				MIRAFLORES DAM.			
	April.	May.	June.	Total.	April.	May.	June.	Total.	April.	May.	June.	Total.
<i>Excavation—Quantities—cubic yards</i>									22,865	3,778		26,643
Drilling.....									\$0.0886	\$0.4491		\$0.1398
Blasting.....									.0623	.1171		.0702
Excavation by power.....									.0987	.0178		.0821
Excavation by hand.....									.7167	2.6282		.9908
Transportation.....									.1076	.1590		.1148
Tracks.....									.1165	.2331		.1442
Trestles.....									*.0111	.0031		*.0091
Pumps.....									.1158	.1326		.1284
Maintenance of equipment.....									.1450	.2287		.1575
Plant arbitrary.....									.0300	.0300		.0300
Division expense.....									.0837	.2226		.1051
Total division cost.....									\$1.5538	\$4.1857		\$1.9538
Administrative and general expense.....									.1426	.7952		.2980
Total cost.....									\$1.6964	\$4.9809		\$2.2518
<i>*Excavation by Central Division—Quantities—cu.yd</i>												
Excavation by power.....									22,865	3,778		26,643
Total Excavation—Quantities—cubic yards.....									22,865	3,778		26,643
Unit cost.....									\$1.6964	\$4.9809		\$2.2518
<i>Masonry—Core Walls—cubic yards</i>												
Concrete.....												
Plant arbitrary.....												
Maintenance of equipment.....												
Division expense.....												
Total division cost.....												
Administrative and general expense.....												
Total cost.....												

Bold-face type indicates credit.

Table No. 2—(Continued.)

	GATUN DAM.				PEDRO MIGUEL DAM				MIRAFLORES DAM.			
	Apl.	May	June	Total.	Apl.	May	June	Total.	Apl.	May	June	Total.
<i>Masonry, Spillway, plain—Quantities—cu. yds.</i>									6,222	18,607	21,716	46,545
Cement									\$2,2247	\$2,1501	\$1,6804	\$1,9409
Stone									.7532	1,0416	.7998	.8903
Sand									.3900	.4250	.3000	.4040
Mixing									.8224	.4088	.3968	.4585
Wood forms									1,3068	.4160	.4914	.5703
Placing									1,3269	.5929	.5175	.6558
Reinforcement									.0460	.0043	.0031	.0093
Power									.0403	.0320	.0114	.0235
Pumping									.1543	.0690	.0785	.0848
Maintenance of equipment									.2513	.1282	.1643	.1615
Plant arbitrary									.5300	.5300	.5300	.5300
Division expense									.2572	.1150	.1400	.1457
Total division expense									\$8.1031	\$5.9129	\$5.2032	\$5.8746
Administrative and general expense									.8580	.2660	.5534	.4792
Total cost									\$8.9611	\$6.1789	\$5.7566	\$6.3538
<i>Masonry Spillway, reinforced—Quan.—Cubic yds</i>									62	130	243	435
Cement									\$2,7431	\$2,9539	\$2,3343	\$2,5746
Stone									.7185	.9994	.7998	.8469
Sand									.3900	.4250	.3916	.4009
Mixing									.1989	.1601	.1594	.1650
Placing									.3642	1,5259	.2567	.6506
Wood forms									3,8144	8,3006	6,1589	6,4569
Reinforcements									16,5692	12,5738	1,3972	6,8914
Pumping									.0250	.0319	.0465	.0391
Maintenance of equipment									.9235	.1335	.0656	.2079
Plant arbitrary									.5300	.5300	.5300	.5294
Power									.0571	.0612	.0243	.0400
Division expense									.6708	.9538	.7476	.7973
Total division cost									27.0047	28.6491	12.9119	\$19.6000
Administrative and general expenses										1,3693	1,8151	1,4214
Total cost									27.0047	30.0184	14.7270	\$21.0214
<i>Total Masonry, Spillway—Quantities—Cu. yds.</i>									6,284	18,737	21,959	46,980
Total cost									\$9.1391	\$6.3443	\$5.8550	\$6.4898
<i>Dry Fill—Quantities—cubic yards</i>	106,862	93,419	99,457	299,768		100	3,580	3,680	16,215	12,570	11,800	40,585
Clearing site												
Excavation	\$0.0786	\$0.0807	\$0.0300	\$0.0632								
Tracks	.0374	.0668	.0648	.0556	\$0.1125	\$0.0102	\$0.0099	\$0.2147	\$0.2815	\$0.2187	\$0.2365	
Trestles	.0008			.0003								
Transportation	.0474	.0587	.0504	.0519		.0990	.0994	.0541	.0639	.0696	.0616	
Filling	.0650	.0802	.0691	.0711	.8406	.1293	.1486	.1285	.1016	.1421	.1241	
Maintenance of equipment	.0506	.0597	.0096	.0398		.0029	.0029	.0573	.0414	.0267	.0435	
Plant arbitrary								.0700	.0700	.0700	.0700	
Division	.0086	.0169	.0124	.0124		.0653	.0192	.0204	.0235	.0271	.0344	.0278
Total division cost	\$0.2884	\$0.3630	\$0.2363	\$0.2943	\$1.0184	\$0.2606	\$0.2812	\$0.5481	\$0.5855	\$0.5615	\$0.5635	
Administrative and general expense	.0128	.0209	.0148	.0160			.0032	.0630	.0534	.0566	.0582	
Total cost	\$0.3012	\$0.3839	\$0.2511	\$0.3103	\$1.0184	\$0.2638	\$0.2994	\$0.6111	\$0.6389	\$0.6181	\$0.6217	
<i>ating—Excavation for Rip Rap Rock—Quant. cu. yd.</i>												
Clearing												
Sluicing												
Drilling												
Blasting												
Loading												
Trucks												
Transportation												
Maintenance of equipment												
Plant arbitrary												
Division expense												
Total division cost												
Administrative and general expense												
Total cost												
<i>Paving, Placing Rip Rap—Quantities—cubic yards</i>	18,241	15,028	9,809	43,078								
Tracks	\$0.1039	\$0.1907	\$0.1073	\$0.1350								
Placing	.1137	.0477	.0246	.0704								
Transportation, Rock	.3773	.3772	.2712	.3531								
Maintenance of equipment	.2084	.2890	.0679	.1698								
Plant arbitrary	.0700			.0296								
Division expense	.0210	.0239	.0165	.0207								
Total division cost	\$0.8943	\$0.8776	\$0.4117	\$0.7786								
Administrative and general expense	.0296	.0282	.0194	.0268								
Total cost	\$0.9239	\$0.9058	\$0.4311	\$0.8054								
Total cost Rip Rap in place	\$0.5509	\$0.9058	\$0.4311	\$0.6474								
<i>Paving—Placing Broken Stone—Quantities cu. yds</i>	4,220			4,220								
Tracks	\$0.0394			\$0.0394								
Placing	.3295			.3294								
Grading												
Crushed Stone	1,2052			1,2052								
Division expense	.0366			.0366								
Total division cost	\$1.6107			\$1.6106								
Administrative and general expense	.0516			.0517								
Total cost	\$1.6623			\$1.6623								
<i>Surfacing—Quantities—square yards</i>	53,850	49,990	41,950	145,790								
Surfacing	\$0.0156	\$0.0125	\$0.0328	\$0.0195								
Division expense	.0015	.0012	.0040	.0021								
Total division cost	\$0.0171	\$0.0137	\$0.0368	\$0.0216								
Administrative and general expense	.0020	.0015	.0048	.0027								
Total cost	\$0.0191	\$0.0152	\$0.0416	\$0.0243								

Bold-face type indicates credit

LOCKS AND SPILLWAYS CONSTRUCTION.

Table No. 3.

Detailed cost per cubic yard for quarter ending June 30 1913:

ITEMS.	GATUN SPILLWAY.				GATUN LOCKS.				PEDRO MIGUEL LOCKS.				MIRAFLORES LOCKS.			
	April.	May.	June.	Total.	April.	May.	June.	Total.	April.	May.	June.	Total.	April.	May.	June.	Total.
Dry excavation—Quantities—cubic yards.					26,949	1,329	228	28,506								
Drilling					\$0.0145	\$0.0684		\$0.0169								
Blasting					.0093	.2468		.0203								
Loading by power					.0557	2.0353		1.476								
Tracks					.0650	2.1444	\$4.4090	.1967								
Transportation					.1275	.2621		.1326								
Dumps																
Trestles																
Pumps					.0330	.8409	2.1731	.0878								
Power					.1228	.2062	1.080	.1266								
Maintenance of equipment																
Plant arbitrary					.0123	.3156	.5168	.0305								
Division expense																
Total division cost					\$0.4401	\$6.1197	\$7.2069	\$0.7590								
Admin. and genl. expense					.0179	.4473	.6160	.0427								
Total cost					\$0.4580	\$6.5670	\$7.8229	\$0.8017								
Preparing foundations, excavation—Quan. cu. yds.					2,333			2,333	620	127		747	390			
Drilling									\$0.0142			\$0.0118				
Blasting																
Loading by power									2.0847	\$8.2562		3.1420	\$4.9732			\$4.9755
Loading by hand					\$0.9557			\$0.9557	.1573			.1305	.6735			.6735
Transportation									.6684	18.1721		4.1393	.6268			.6268
Tracks																
Dumps									.0158	.0508		.0217	.0272			.0272
Pumps																
Coffer dams																
Maintenance of equipment					.0898			.0898	.3352	1.2617		.5404	.3114			.3114
Plant arbitrary												.2580	.0300			.0300
Division expense					.0935			.0935	.1935	.5288			.4618			.4621
Total division cost					\$1.1390			\$1.1390	\$3.4691	\$28.2696		\$8.2437	\$7.1039			\$7.1065
Admin. and genl. expense					.1543			.1543	.3557	2.6258		1.1117	2.4576			3.4191
Total cost					1.2933			1.2933	\$3.8248	\$30.8954		\$9.3554	\$9.5615			10.5256
Preparing foundations, dredging—Quan. cu. yds.					1,211			1,211								
Dredging					\$1.1927			\$2.6699								
Sluicing					1.8460			1.8468								
Pipe Lines					.0040			.0041								
Maintenance of equipment					.0717			.0122								
Division expense					.1578			.2348								
Total division cost					\$3.1288			\$4.7678								
Admin. and genl. expense					.2740			.3461								
Total cost					\$3.4028			\$5.1139								
Preparing foundations, wooden piling—Quan. lin. ft.																
Wooden piles in place																
Maintenance of equipment																
Plant arbitrary																
Division expense																
Total division cost																
Admin. and genl. expense																
Total cost																
Masonry.																
Concrete—Quan. cu. yds.	1,358	717	455	2,530	18,501	5,634	96	24,231	62	106	14	182	9,350	3,447	106	12,903
Cement	\$1.5031	\$1.6667	\$1.8352	\$1.6092	\$1.2437	\$1.2160	\$1.9532	\$1.2401	\$1.5819	\$2.1671	\$3.0571	\$2.0362	\$2.2196	\$1.8937	\$1.7212	\$2.1285
Stone	1.0484	1.1116	.7451	1.0117	1.6802	1.5301	.7406	1.6415	.7577	1.0460	.7986	.9288	.7357	1.0391	.8032	.8173
Sand	.2984	.3490	.4027	.3315	.3011	.2756	.2850	.2951	.3900	.4250	.3900	.4104	.3842	.4251	.3900	.3951
Mixing	.4387	.8382	.8872	.6326	.2608	.3901	.3987	.2914	3.5907	5.0153	14.0614	8.2258	2.302	.2802	5.2423	.2847
Wood form	2.5117	2.4600	4.0819	2.7794	.9911	1.3349	9.0955	1.1031	21.2681	44.6226	64.4264	38.1901	.9172	2.3496	10.9228	1.8749
Steel forms													.0067	.0164	.1266	.0103
Placing	.9202	2.5154	1.3711	1.4534	.7677	1.0722	13.8180	.8902	9.0963	41.8003	201.3207	42.9301	.6207	1.5414	35.0708	1.1497
Reinforcements	.2292	.0058		.1247	.0035	.2381		.0027					.0271	.0316	.0534	.0285
Pumps					.0523	.1087	.0996	.0957	.0158	.0508	.0793	.0411	.0271	.0316	.0534	.0285
Power					.0661		1.3464	.0811					.0585	.0642	.1069	.0604
Coffer dams	.0994	.5002	1.7531	.5104												
Maintenance of equipment	.3616	.2066	.0263	.2573	.3025	.1741	4.1485	.2550	.0234	.0773	.5657	.0806	.0627	.1920	9.8721	.1779
Plant arbitrary	.2540	.2540	.2540	.2540									.5300	.5126	.5300	.5254
Division expense	.3194	.4739	.8236	.4539	.1818	.3263	2.5654	.2249	2.5903	2.5376	18.7529	3.8029	.1473	.2522	10.6059	.2613
Total division cost	\$7.9841	10.3814	12.1802	\$9.4181	\$5.8508	\$6.6661	26.1539	\$6.1208	39.3142	\$97.5874	302.3207	\$93.4848	\$8.9399	8.5981	135.4452	\$7.7140
Admin. and genl. expense	2.0498	1.6662	2.3853	2.0015	.3244	.7734	.4273	.4444	7.2069	4.1035	65.0100	9.8458	.8915	1.8614	39.6945	1.4693
Total cost	10.0339	12.0476	14.5655	11.4196	\$6.1752	\$7.4395	26.5812	\$6.5652	46.5211	101.6909	367.3307	103.3306	6.8314	10.4595	175.1397	\$9.1833
Masonry, reinforced—Quantities—cubic yards			110	110	2,672	6,552	4,982	14,206	1,597	488	244	2,329	1,930	612	591	3,133
Cement			\$1.8497	\$1.8497	\$1.8437	\$1.8822	\$1.8735	\$1.8718	\$2.1770	\$2.8674	\$3.2699	\$2.4362	\$2.7403	\$2.5987	\$2.3743	\$2.6437
Stone			.7522	.7522	1.6354	1.5393	.7441	1.2785	.7179	.9892	.7966	.7870	.7175	.9864	.7989	.7853
Sand			.2925	.2925	.3016	.2805	.3186	.2978	.3902	.4215	.3868	.3964	.3904	.4222	.3894	.3964
Mixing			.8965	.8965	.1816	.2055	.3335	.2458	.8793	.8770	3.1815	1.1200	.7581	.5552	.7684	.7204
Wood forms			2.2141	2.2141	6.1269	3.5520	2.5179	3.6736	1.8381	7.0299	16.9931	4.5136	1.4341	1.2609	1.5106	1.4147
Steel forms																
Placing					.0134	.0089	.0372	.0197	.0035		.0425	.0069	.0205	.0114	.0191	.0184
Reinforcements			1.3549	1.3549	.9111	.6755	.6264	.7022	1.2540	3.8958	7.7697	2.4901	1.5435	4.0093	2.7145	2.2462
Chipping to grade					.7315	.3797	.0880	.3436	2.3366	.8272	1.9545	1.9803	.0952	.0396		.0664
Pumps					.1858	.0407	.0002	.0531	.0159	.0503	.5723	.0814	.0269	.0317	.0464	.0315
Maintenance of equipment			.0266	.0266	.1504	.2856	.2394	.2440	.0671	.0304	.0434	.0351	.7936	.0398	.1554	.5260
Plant arbitrary			.2508	.2508									.5251	.5257	.5291	.5259
Division expense			.4963	.496	.3905	.3334	.3915	.3645	.3541	.6735	2.4474	.6404	.3615	.4098	.3837	.3751
Total division cost			\$8.1396	\$8.139	2.4719	\$9.1833	\$7.2911	\$9.1382	10.0337	\$17.6014	\$37.3709	\$14.4834	\$9.4067	10.8907	\$9.6898	\$9.7500
Admin. and genl. expense			1.3724	1.372	1.4639	.8442	1.0279	1.0252	2.3662	4.9915	6.1866	3.3165	1.6569	3.6885	1.6638	2.0551
Total cost			\$9.5120	\$9.512	3.9358	10.0275	\$8.3190	10.1634	12.3999	\$22.5929	\$43.5575	\$17.7999	11.0636	14.5792	\$11.3536	11.8051

Bold-face type indicates credit.

Table No. 3—(Continued.)

ITEMS.	GATUN SPILLWAY.				GATUN LOCKS.				PEDRO MIGUEL LOCKS.				MIRAFLORES LOCKS.			
	Apl.	May	June	Total.	Apl.	May	June	Total.	Apl.	May	June	Total.	Apl.	May	June	Total.
Total Masonry—Quantities—cubic yards	1,358	717	565	2,640	21,173	12,186	5,078	38,437	1,659	594	258	2,511	11,280	4,059	697	16,036
Total cost	10.0339	12.0476	13.5615	11.3358	\$7.2018	\$8.8310	\$8.7367	\$7.8951	13.6751	\$36.7080	\$61.1266	\$23.9993	\$7.5555	11.0807	\$36.2622	\$9.6955
Back filling—Quantities—cubic yards					33,168	27,442	31,225	90,835	25,752	12,496	7,260	45,508	89,798	66,190	62,357	218,345
Drilling						\$0.0345	\$0.0288	\$0.0199								
Blasting					\$0.0009	.0107	.0525	.0214								
Loading					.0001		.0430	.0150								
Tracks					.0159	.0978	.1006	.0799	\$0.0776	\$0.0949	\$0.1624	\$0.0959	\$0.0590	\$0.0766	\$0.1015	\$0.0765
Transportation						.0765	.0769	.0484	.0220	.0576	.0490	.0361	.0560	.0590	.0704	.0610
Filling					.2783	.2394	.3379	.2874	.1402	.0932	.1342	.1264	.0404	.0551	.4868	.1724
Maintenance of equipment					.0092	.0742	.0386	.0382	.0101	.0239	.0160	.0148	.0289	.0270	.0221	.0264
Plant arbitrary									.0903	.1252	.1300	.1061	.1100	.1100	.0581	.0952
Division expense					.0245	.0338	.0518	.0366	.0109	.0140	.0307	.0149	.0693	.0106	.0199	.0127
Total division cost					\$0.3592	\$0.5669	\$0.7292	\$0.5468	\$0.3511	\$0.4088	\$0.5223	\$0.3942	\$0.3036	\$0.3383	\$0.7588	\$0.4442
Admin. and general expense					.0347	.0411	.0646	.0469	.0315	.0605	.0832	.0477	.0211	.0303	.0342	.0276
Total cost					\$0.3939	\$0.6080	\$0.7938	\$0.5937	\$0.3826	\$0.4693	\$0.6055	\$0.4419	\$0.3247	\$0.3686	\$0.7930	\$0.4718
Filling center wall—Quantities—cubic yards									39,318	19,950	11,275	70,543	26,856	24,214	76,665	127,735
Loading									\$0.0096	\$0.0332	\$0.0850	\$0.0238	\$0.1115	\$0.3119	\$0.0256	\$0.0980
Tracks									.0515	.0948	.0607	.0652	.0531	.0644	.0487	
Transportation									.0553	.1394	.4514	.1424	.2506	.2096	.1325	.1718
Filling													.0112	.0110		.0044
Power																
Maintenance of equipment									.0237	.0393	.0510	.0325	.0511	.0901	.0437	.0541
Plant arbitrary									.1300	.1300	.1300	.1300	.1100	.1100	.1100	.1100
Division expense									.0065	.0150	.0506	.0160	.0247	.0275	.0166	.0203
Total division cost									\$0.2676	\$0.4517	\$0.8287	\$0.4094	\$0.5585	\$0.8132	\$0.3928	\$0.5073
Admin. and general expense									.0139	.0374	.0938	.0333	.0264	.0686	.0318	.0377
Total cost									\$0.2815	\$0.4891	\$0.9225	\$0.4427	\$0.5849	\$0.8818	\$0.4246	\$0.5450

*The high cost of Masonry during the quarter, is due to charges for clearing rubbish etc., from Lock floors. This expense was proportioned to "Wood Forms," "Mixing" and "Placing."

DRY EXCAVATION—PRISM.

Table No. 4.

Detailed cost per cubic yard for quarter ending June 30, 1913.

ITEMS.	ATLANTIC DIVISION.				CENTRAL DIVISION.				PACIFIC DIVISION.			
	April.	May.	June.	Total.	April.	May.	June.	Total.	April.	May.	June.	Total.
Dry excavation—Quantities—cubic yards					1,178,000	921,000	808,009	2,907,009	375,080	261,014	229,894	865,988
Clearing												
Drilling					\$0.0451	\$0.0482	\$0.0446	\$0.0460	\$0.0414	\$0.0585	\$0.0561	\$0.0504
Blasting					.0398	.0416	.0427	.0412	.0101	.0108	.1186	.0391
Loading					.0589	.0695	.0774	.0674	.0812	.0780	.0846	.0811
Tracks					.0978	.1157	.1342	.1136	.1234	.1457	.1214	.1296
Transportation					.0845	.1168	.1519	.1134	.0748	.0837	.0661	.0752
Dumps					.0534	.0733	.0645	.0628	.0172	.0246	.0203	.0203
Pumps					.0060	.0218	.0083	.0117	.0301	.0335	.0461	.0354
Maintenance of equipment					.1241	.1285	.1250	.1257	.0418	.0823	.0561	.0578
Plant arbitrary									.0900	.0900	.0900	.0900
Division expense					.0087	.0128	.0192	.0129	.0209	.0218	.0284	.0232
Total division cost					\$0.5183	\$0.6282	\$0.6678	\$0.5947	\$0.5309	\$0.6289	\$0.6877	\$0.6021
Administrative and general expense					.0340	.0430	.0559	.0429	.0444	.0499	.0555	.0490
Total cost					\$0.5523	\$0.6712	\$0.7237	\$0.6376	\$0.5753	\$0.6788	\$0.7432	\$0.6511

DREDGING EXCAVATION—PRISM.

Table No. 5.

Detailed cost per cubic yard for quarter ending June 30th, 1913.

ITEMS	ATLANTIC DIVISION.								PACIFIC DIVISION.							
	April.		May.		June.		Total.		April.		May.		June.		Total.	
	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.
Clearing.....																
Op'n seagoing suction dredge	99,859	\$0.0296	330,853	\$0.0302	341,576	\$0.0363	772,288	\$0.0328	160,352	\$0.0554	167,111	\$0.0549	138,316	\$0.0679	465,779	\$0.0589
R'prs, seagoing suction dredge	99,859	.2380	330,853	.0019	341,576	.0073	772,288	.0350	160,352	.0163	167,111	.0068	138,316	.0166	465,779	.0130
Op'n, small ladder dredges..	48,374	.1535	55,054	.1318	48,131	.1484	151,559	.1440	77,637	.1140	71,192	.1014	192,211	.0551	341,040	.0782
Repairs, small ladder dredges	48,374	.0199	55,054	.0101	48,131	.0424	151,559	.0035	77,637	.0586	71,192	.0642	192,211	.0128	341,040	.0339
Op'n, 5-yard, ladder dredge..									108,403	.0893	79,853	.1167	148,314	.0559	336,570	.0810
Repairs, 5-yard ladder dredge									108,403	.0942	79,853	.0853	148,314	.0793	336,570	.0855
Operation, dipper dredges....	59,561	.0608	70,545	.0739	78,943	.0869	209,049	.0751	10,550	.3454	25,531	.1474	26,029	.1207	62,110	.1699
Repairs, dipper dredges.....	59,561	.2199	70,545	.1074	78,943	.0986	209,049	.1361	10,550	.5425	25,531	.1812	26,029	.0910	62,110	.2048
Operation, pipe line dredges..	228,811	.0799	228,711	.0689	345,942	.0618	803,464	.0690			26,016	.0316	99,210	.0544	125,226	.0497
Repairs, pipe line dredges....	228,811	.0004	228,711	.0244	345,942	.0268	803,464	.0186			26,016	.0090	99,210	.0372	125,226	.0314
Pipe lines.....	228,811	.0149	228,711	.0260	345,942	.0114	803,464	.0166			26,016	.0016	99,210	.0032	125,226	.0029
Dykes.....																
Op'n, tugs, clapets and scows	107,935	.1068	125,599	.0791	127,074	.1067	360,608	.0971	196,590	.0855	176,576	.0835	366,554	.0564	739,720	.0706
R'prs,tugs,clapets,andscoWs.	107,935	.0261	125,599	.1079	127,074	.0647	360,608	.0682	196,590	.0372	176,576	.0607	366,554	.0384	739,720	.0434
Drilling.....	58,866	.0211	121,990	.0210	91,807	.0095	272,663	.0171	72,619	.1156	53,609	.0798	179,461	.0072	305,689	.0371
Blasting.....	58,866	.0965	121,990	.0487	91,807	.0032	272,663	.0437	72,619	.2630	53,609	.0326	179,461	.0498	305,689	.0372
Operation, drill barges.....									72,619	.1950	53,609	.0089	179,461	.0084	305,689	.1164
Repairs, drill barges.....									72,619	.0677	53,609	.0089	179,461	.0084	305,689	.0084
Operation, rock breakers.....									72,619	.0264	53,609	.0279	179,461	.0679	305,689	.0158
Repairs, rock breakers.....									72,619	.0014	53,609	.0018	179,461	.0015	305,689	.0015
Small boats.....	436,605	.0023	685,163	.0019	814,592	.0014	1,936,360	.0018	356,942	.0073	369,703	.0052	604,080	.0039	1,330,725	.0052
Repairs, misc. equipment.....	436,605	.0011	685,163	.0065	814,592	.0004	1,936,360	.0006	356,942	.0171	369,703	.0145	604,080	.0070	1,330,725	.0118
Plant arbitrary.....	436,605	.0510	685,163	.0510	814,592	.0510	1,936,360	.0510	356,942	.0172	369,703	.0177	604,080	.0159	1,330,725	.0167
Division expense.....	436,605	.0063	685,163	.0060	814,592	.0078	1,936,360	.0068	356,942	.0111	369,703	.0121	604,080	.0087	1,330,725	.0103
Total division cost.....	436,605	\$0.2781	685,163	\$0.1914	814,592	\$0.1739	1,936,360	\$0.2036	356,942	\$0.3958	369,703	\$0.3384	604,080	\$0.1725	1,330,725	\$0.2785
Admin. and general expense	436,605	.0167	685,163	.0144	814,592	.0090	1,936,360	.0126	356,942	.0337	369,703	.0383	604,080	.0228	1,330,725	.0300
Total cost.....	436,605	\$0.2948	685,163	\$0.2058	814,592	\$0.1829	1,936,360	\$0.2162	356,942	\$0.4295	369,703	\$0.3767	604,080	\$0.1953	1,330,725	\$0.3085
Earth excavation—per cent....	377,739	86.52	563,173	82.20	722,785	88.73	1,663,697	85.92	284,323	79.66	316,094	85.50	424,619	70.29	1,025,036	77.63
Rock excavation—per cent....	58,866	13.48	121,990	17.80	91,807	11.27	272,663	14.08	72,619	20.34	53,609	14.50	179,461	29.71	305,689	22.97

Bold-face type indicates credit.

STONE PRODUCTION.

Table No. 6.

Detailed cost per cubic yard for quarter ending June 30th, 1913.

	ANCON QUARRY.			
	April.	May.	June.	Total.
Quarrying—Quantities—cubic yards	50,092	29,274	54,446	*145,739
Stripping.....	\$0.0465			
Drilling.....	.1808	\$0.0929	\$0.0120	\$0.0392
Blasting.....	.0709	.2437	.1261	.1582
Loading.....	.0460	.0968	.0607	.0665
Transportation.....	.0699	.0450	.0578	.0464
Tracks.....	.0303	.1077	.0548	.0661
Maintenance of equipment.....	.0659	.1306	.1025	.0685
Plant arbitrary.....	.1000	.1000	.1000	.1000
Total.....	\$0.6103	\$0.9153	\$0.5940	\$0.6237
Crushing—				
Operation of crushers.....	\$0.0213	\$0.0510	\$0.0432	\$0.0343
Stone bins and conveyors.....	.0049	.0154	.0046	.0065
Power.....	.0195	.0343	.0246	.0228
Maintenance of equipment.....	.0653	.1027	.1926	.0814
Plant arbitrary.....	.0221	.0200	.0200	.0207
Total.....	\$0.1331	\$0.2264	\$0.1950	\$0.1657
Rail transportation to storage—				
Operation of trains.....	\$0.0297	\$0.0599	\$0.0397	\$0.0371
Repairs to tracks.....	.0157	.0438	.0092	.0177
Dumping in storage.....	.0138	.0249	.0116	.0140
Maintenance of equipment.....	.0400	.0400	.0400	.0400
Plant arbitrary.....				
Total.....	\$0.0992	\$0.1686	\$0.1005	\$0.1088
Division expense.....	\$0.0276	\$0.0410	\$0.0273	\$0.0279
Total cost in storage.....	\$0.8702	\$1.3513	\$0.9168	\$0.9261

*NOTE.—Under "Total" 11,927 cubic yards have been added to adjust difference between cross section measurements of stock pile and book balance. This amount was not added to monthly quantities.

SAND PRODUCTION.

Table No. 7.

Detailed cost per cubic yard for quarter ending June 30th, 1913.

	GATUN.				CHAMR.			
	April.	May.	June.	Total.	April.	May.	June.	Total.
Dredging—Quantities—cubic yards					24,454	21,776	29,630	75,860
Operation, dredges.....					\$0.1222	\$0.1495	\$0.0954	\$0.1196
Maintenance of equipment.....					.1501	.2703	.0115	.1304
Total.....					\$0.2723	\$0.4198	\$0.1069	\$0.2500
Plant arbitrary.....					\$0.0066	\$0.0066	\$0.0066	\$0.0066
Total cost of production.....					\$0.2789	\$0.4264	\$0.1135	\$0.2566

Table No. 7—(Continued.)

ITEMS.	GATUN				CHAMÉ			
	Apl.	May	June	Total	Apl.	May	June	Total
Towing—Quantities—cubic yards.....					24,454	21,776	29,630	75,860
Operation, tugs and barges.....					\$0.1355	\$0.1311	\$0.1067	\$0.1230
Maintenance of equipment.....					.0754	.1274	.0393	.0762
Plant arbitrary.....					.0134	.0134	.0134	.0134
Total.....					\$0.2243	\$0.2719	\$0.1594	\$0.2126
Unloading—Quantities—cubic yards.....					23,454	20,776	29,630	73,860
Operation, cableways and cranes.....					\$0.1153	\$0.1215	\$0.0901	\$0.1069
Power.....					.0169	.0218	.0170	.0184
Maintenance of equipment.....					.0984	.0353	.0399	.0572
Plant arbitrary.....					.0110	.0100	.0100	.0103
Total.....					\$0.2416	\$0.1886	\$0.1570	\$0.1928
Rail Transportation to Storage—Quantities—cubic yards.....					23,454	20,776	29,630	73,860
Operation of cranes.....					\$0.0389	\$0.0588	\$0.0408	\$0.0452
Operation of trains.....					.0665	.0215	.0051	.0292
Repairs to tracks.....					.0219	.0138	.0108	.0152
Dumping in storage.....					.0188	.0254	.0126	.0182
Maintenance of equipment.....					.0200	.0200	.0200	.0200
Plant arbitrary.....								
Total.....					\$0.1661	\$0.1395	\$0.0893	\$0.1278
Division expense.....					\$0.0366	\$0.0325	\$0.0249	\$0.0309
Total cost in storage.....					\$0.9475	\$1.0589	\$0.5441	\$0.8207

COLON BREAKWATER.

Table No. 8.

ITEMS.	COLON BREAKWATER.				ITEMS.	COLON BREAKWATER—Cont'd.			
	April	May	June	Total		April	May	June	Total
Porto Bello Large Rock. Quarrying—Quantities—Cubic yards.....	19,515	19,772	19,681	58,968	Placing— Operation of floating derricks.....	\$0.1407	\$0.2365	\$0.2067	\$0.1948
Stripping.....	\$0.3562	\$0.3363	\$0.4177	\$0.3700	Maintenance, floating derricks.....	.1366	.0188	.1478	.1008
Drilling.....	.0814	.0514	.1014	.0780	Operation, cranes.....	.1715	.1356	.1430	.1500
Blasting.....	.1468	.2034	.1266	.1590	Operation, trains.....	.0731	.0563	.0408	.0567
Loading.....	.1104	.1270	.1246	.1207	Dumping.....	.0087	.0112	.0115	.0104
Transportation.....	.1271	.1658	.1613	.1515	Maintenance of equipment.....	.1030	.0870	.1040	.0980
Tracks.....	.4831	.4736	.3714	.4426	Plant arbitrary.....	.1500	.1500	.1500	.1500
Loading on barges.....	.1521	.1599	.2225	.1782	Total.....	\$0.7836	\$0.6954	\$0.8038	\$0.7607
Power.....	.1144	.1156	.1344	.1215	Trestles.....	\$0.1081	\$0.0732	\$0.1008	\$0.0940
Maintenance of equipment.....	.7981	.4811	.7763	.6846	Tug service, miscellaneous.....	.0522	.0593	.0409	.0508
Plant arbitrary.....	.3320	.3320	.3320	.3320	Maintenance of equipment.....	.0316	.0004	.0082	.0134
Total.....	\$2.7016	\$2.4461	\$2.7682	\$2.6381	Division expense.....	.1658	.1553	.1900	.1703
Towing— Operation, tugs and barges.....	\$0.2907	\$0.2883	\$0.2558	\$0.2782	*Total division cost.....	\$4.6632	\$4.1440	\$4.7314	\$4.5118
Maintenance of equipment.....	.1456	.0420	.1797	.1223	Administrative and general expense.....	.4208	.3464	.3137	.3602
Plant arbitrary.....	.3840	.3840	.3840	.3840	Total cost.....	\$5.0840	\$4.4904	\$5.0451	\$4.8720
Total.....	\$0.8203	\$0.7143	\$0.8195	\$0.7845					

PERMANENT POWER HOUSE—GATUN.

Table No. 9.

ITEMS.	Apl.	May	June	Total
Preparing Foundations—Quantities—cubic yds.....	10	500	160	670
Drilling.....				
Blasting.....			\$0.0838	\$0.0203
Loading by power.....			1.8062	1.8056
Loading by hand.....	\$15.7110	\$11.2522	1.030	7713
Tracks.....	.3250	10.0714	.1030	.7713
Transportation.....				
Maintenance of equipment.....	27.9720	.0038		.4178
Plant arbitrary.....				
Division expense.....	8.9110	1.0646	.2358	.2687
Total division cost.....	\$52.2690	\$22.3920	\$2.2288	\$2.9834
Administrative and general expense.....	12.3870	1.2998	.2776	.3482
Total cost.....	\$64.6560	\$23.6918	\$2.5064	\$3.3316
Masonry Substructure—Quantities—cubic yds.....	941	882	1,456	3,279
Cement.....	\$1.5024	\$1.6680	\$1.8329	\$1.6937
Stone.....	1.0479	1.1098	.7438	.9295
Sand.....	.2982	.3492	.2863	.3066
Forms.....	1.4645	3.1647	2.0076	2.1630
Mixing.....	.1731	.7261	.9114	.6496
Reinforcement.....	.0033	.0384	.1454	.0750
Placing.....	1.8155	2.0070	1.3059	1.6408
Coffer dams.....				
Maintenance of equipment.....	.4375	.2455	.0302	.2050
Plant arbitrary.....	.2540	.2540	.2540	.2540
Division expense.....	.1772	.2323	.1773	.1921
Total division cost.....	\$7.1736	\$9.7920	\$7.6948	\$8.1093
Administrative and general expense.....	.4489	.8837	.2663	.4041
Total cost.....	\$7.6225	\$10.3757	\$7.9611	\$8.5134


HYDRAULIC EXCAVATION GOLD HILL

Table No. 10.

Detailed cost per cubic yard for quarter ending June 30, 1913.

ITEMS.	April	May	June	Total
Quantities—cubic yards.....			57,274	57,274
Blasting.....			\$0.0001	\$0.0001
Pumping station.....			.0287	.0287
Pipe lines and monitors.....			.0286	.0286
Flumes.....			.0093	.0093
Maintenance of equipment.....			.0129	.0129
Plant arbitrary.....			.1000	.1000
Division expense.....			.0039	.0039
Total division cost.....			\$0.1835	\$0.1835
Administrative and general expenses.....				
Total cost.....			\$0.1835	\$0.1835

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